

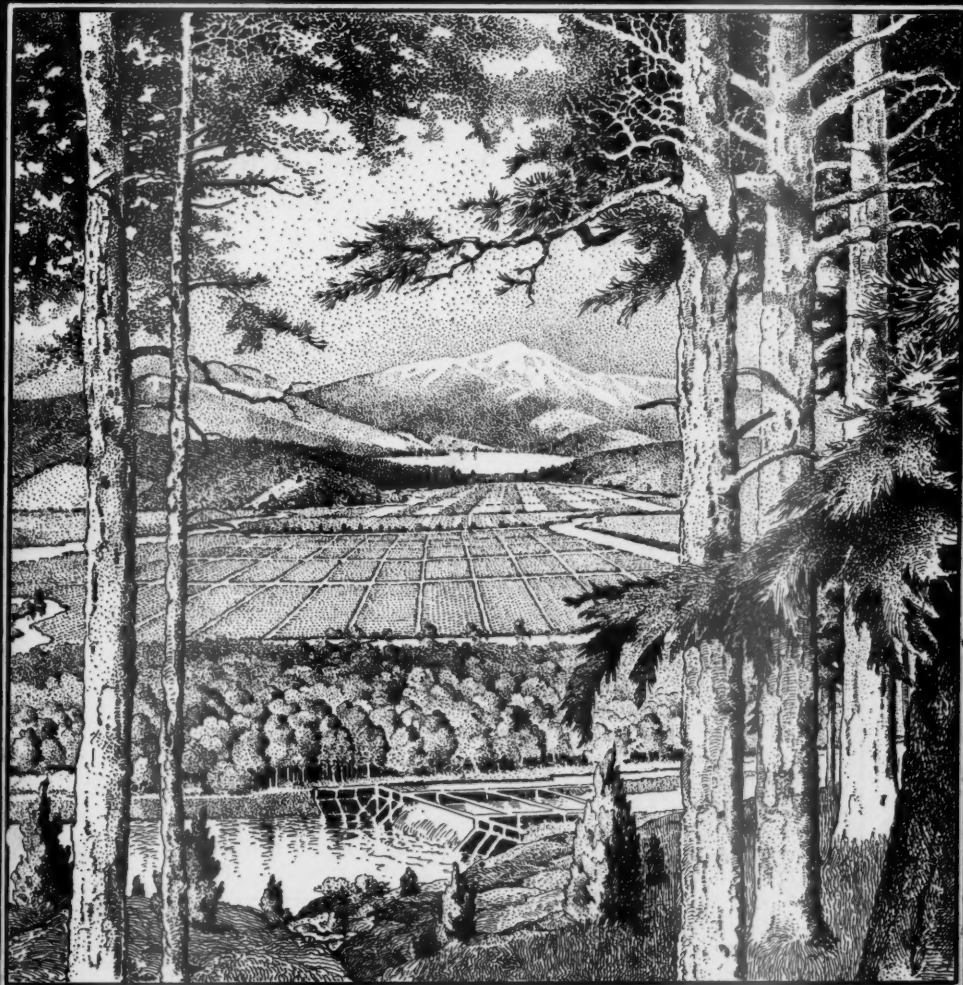
INDIVIDUAL RESPONSIBILITY vs. COMMISSIONS—Senator Newlands

Vol. XII—No. 2

FEBRUARY, 1906

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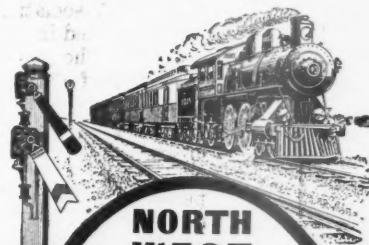
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The objects of this Association are to promote :

1. A business-like and conservative use and treatment of the forest resources of this country ;
2. The advancement of legislation tending to this end, both in the States and the Congress of the United States, the inauguration of forest administration by the Federal Government and by the States ; and the extension of sound forestry by all proper methods ;
3. The diffusion of knowledge regarding the conservation, management, and renewal of forests, the proper utilization of their products, methods of reforestation of waste lands, and the planting of trees.

The Association desires and needs as members all who are interested in promoting the objects for which it is organized—all who realize the importance of using the natural resources of the country in such a manner as not to exhaust them, or to work ruin to other interests. In particular it appeals to owners of wood-lands, to lumbermen and foresters, as well as to engineers, professional, and business men who have to do with wood and its manifold uses, and to persons concerned in the conservation of water supplies for irrigation or other purposes.

The American Forestry Association holds annual and special meetings at different places in the country for the discussion and exchange of ideas, and to stimulate interest in its objects. *Forestry and Irrigation*, the magazine of authority in its special field, is the official organ of the Association, and is sent free to every member monthly. Its list of contributors includes practically all persons prominent in forest work in the United States, making it alone worth the cost of annual membership in the Association.

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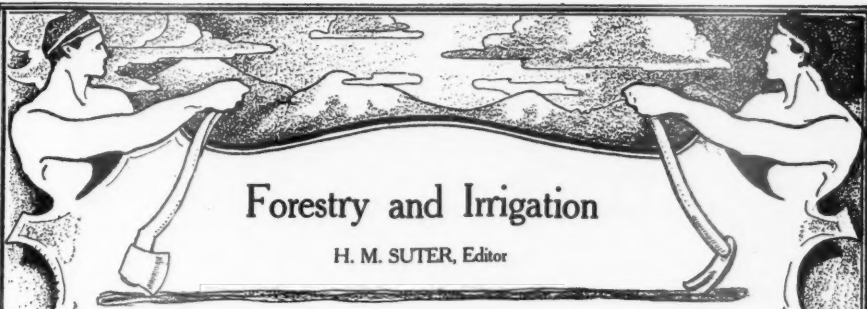
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Forestry and Irrigation

H. M. SUTER, Editor

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Forestry and Irrigation.

VOL. XII.

FEBRUARY, 1906.

No. 2

NEWS AND NOTES

Meeting of Directors

A meeting of the Board of Directors of the American Forestry Association was held in the office of the president, at the Department of Agriculture, Washington, D. C., Tuesday, February 6. After election of officers plans for the year's work were discussed and adopted, and referred to the newly-elected executive committee for action. This committee is composed of Mr. Gifford Pinchot, Mr. William S. Harvey, Mr. F. H. Newell, Mr. James H. Cutler, and Mr. William L. Hall. A budget estimate of receipts and expenditures for the fiscal year of 1906 was presented by the treasurer. A statement by the secretary showed that 302 new members were elected during the month of January. It was decided to hold meetings of the Board of Directors quarterly, in January, April, July, and October.

Awakening Interest in South

Mr. Alfred Gaskill, of the Forest Service, is spending the month of February in Alabama, in meeting and addressing farmers' conferences and commercial bodies, to awaken an interest in forestry. Though the Southern States are now the center of the Eastern lumber industry, and though the Southern forests are destined to play so important a part in the economic development of the region, the true importance of these forests and their great possibilities have by no means been grasped. Already great inroads have been made on Southern forest resources, and if the story of waste followed by useless regret which is told of the Northern forests is not

to be repeated in the South, it is imperative that the public mind be roused and that steps be taken in time to check exhaustion of supplies, before it is too late, by calling in the services of forestry. Alabama, singularly rich in forest resources, is still fortunately in a position, by taking thought, to add vastly to her industrial growth through the wise utilization of these forest riches.

Storage Tests of Seeds

Numerous packages of forest tree seed are being received by the Forest Service in Washington from the several nursery stations throughout the West where seedlings are being grown for planting on forest reserves. These seeds will be used in carrying on extensive storage tests to determine the best methods of preserving seeds of the several species most commonly used. The more important species are western yellow pine, jack pine, Coulter pine, knobcone pine, red fir, white fir, and incense cedar.

The work in Washington is in co-operation with the Seed Testing Laboratory, and the seeds will be stored dry, in cool basements, in cold storage, and in hermetically sealed jars. Corresponding tests will be carried on at the nurseries on the western forest reserves, and the comparative results are expected to show not only which method of storage is best, but in which locality seeds retain their vitality longest. In view of the rapid increase in forest planting operations, particularly in connection with planting on denuded watersheds, this work becomes of high importance.

**Reform in
Turpentine**

Now that experiment has shown that the productive life and the total crop of turpentine trees may be prolonged by reducing the size and depth of the wound made in chipping, the Forest Service, as the next step, has taken up the best means of accurately regulating the chipping so as to make it uniformly of the right depth and height. In the present method of hand chipping there is a good deal of variation in the work of different men. To obviate this, an instrument is being devised by means of which exact chipping may be done. By this means it is hoped to give much greater certainty to the increased yield and greater total profit which the recent experiments have shown to be possible under an improved system of chipping.

**Combatting
Damage
by Rabbits**

During the winter the damage caused by rabbits to trees set out by the Forest Service on watersheds in reserves in southern California, will be met by the adoption of measures recommended by Dr. C. Hart Merriam, Chief of the United States Biological Survey. The trees have many hard conditions to contend with. The thin soil and extreme aridity are trying enough, and of late rabbits have been eating off the young trees of certain species. Knobcone and Coulter pines are favorites with the rabbits, while incense cedar is not touched. By using large seedlings and making a proper choice of species the injury done by the rabbits is to some extent obviated. But stronger measures are needed. Those to be tried will include steel traps set in the regular run-ways that the rabbits frequent, poisoned grain, and the wetting with strychnine syrup of the branches of those seedlings which the rabbits injure.

**Timber
Testing**

The timber-testing machinery which the Forest Service will use at the laboratory of the University of Washington, at Seattle, has arrived, and Mr. Rolf Thelan, the assistant as-

signed to the timber-testing work there, will go to Seattle to put the machines in operation. The Seattle laboratory is one of three on the Pacific Coast at which the Forest Service is conducting tests of the strength of the structural timbers of the region. The two other laboratories are at the University of California and the University of Oregon, which, like the Washington State University, are co-operating with the Service.

**Planting
in Prairie
Regions**

The success of the planting operations on the Dismal River Forest Reserve in Nebraska has indicated to ranchmen in the sand-hill country the advisability of planting for protection and timber supply. The jack pine and western yellow pine are very promising, and, in addition, certain of the rapid-growing broadleaf trees, such as Carolina poplar, green ash, and cottonwood, can be used.

In the spring of 1904 some ten or a dozen ranchmen planted small quantities of jack pine obtained from the woods of northern Minnesota on trial. Authoritative reports from nearly all of these men show a high proportion of success, only two absolute failures being reported, and these because of unfavorable local conditions and lack of care.

The Forest Service has recently received an application for assistance in planting ten acres near Broken Bow, and it is expected that the applications from ranchmen will rapidly increase in the future.

**Progress on
Umatilla
Project**

Officials of the Reclamation Service in Washington are much pleased with the progress being made by the land owners on the Umatilla project, Oregon. Late advices from the engineer on the ground indicated a strong interest on the part of the water users who have already pledged 13,000 out of 18,000 acres included in the project.

As most of the legal difficulties have been adjusted by the Secretary of the Interior, it is believed that no great

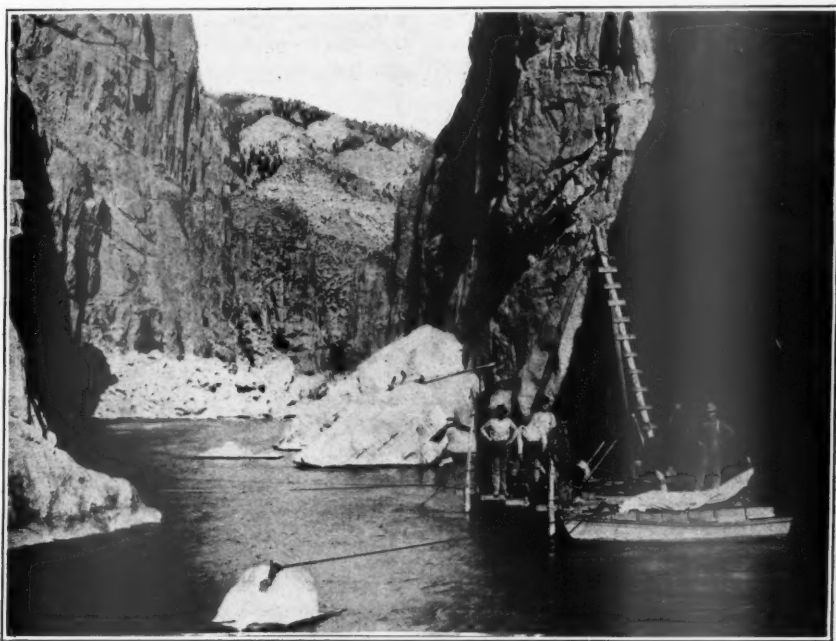
delay will occur in signing up all of the land embraced in this project. Although the Umatilla is one of the minor national works in point of cost and acreage, the favorable climate, low altitude, the fertile soil and its adaptability to a very wide variety of products, makes this one of the most attractive projects undertaken.

The land is best suited for orchards and small fruits, and when so used from 10 to 20 acres are ample for the

tered, and predict a populous and prosperous community here at no distant day.

City Park Forestry

The Forest Service has submitted to the Improvement Society of Helena, Montana, a detailed plan for forest planting on treeless portions of Mount Helena, which lies on the outskirts of the city. This plan, in general, covers the collecting and storing of the necessary tree seeds, growing



Diamond Drill on Barge in Shoshone River at Dam Site, Shoshone Project, Wyoming

support of a family. The fruit and vegetables are the first on the market. The transportation facilities are excellent, the markets being the large cities of Portland and Spokane.

The engineering works are simple, and while the cost of water is \$60 per acre, it is relatively low compared with the values produced. The soil experts who have thoroughly examined the whole area are enthusiastic concerning the future of this section when wa-

the stock in a nursery, and planting the trees in the park. The proposed park contains about 900 acres, of which about 140 acres are already covered with young timber.

North Dakota Reclamation

The Secretary of the Interior has set aside from the Reclamation Fund the sum of \$450,000 to be used in connection with the \$550,000 already allotted for pumping projects in North Dakota, for initial installation on the

Nesson, Williston, and Buford-Trenton projects, upon the following conditions:

First: That the land owners pledge themselves in the usual way through the water users' association, to return the cost to the Reclamation Fund.

Second: That the holdings of private lands in excess of 160 acres for which water is to be furnished be disposed of in tracts not exceeding 80 acres of irrigable land.

Third: That the owners of irrigable lands in excess of 160 acres be required to dispose of them in the manner provided by the general form of contract for this purpose and approved by the department.

Klamath Project

The Secretary of the Interior has authorized the Supervising Engineer of the U. S. Reclamation Service, at Los Angeles, California, to receive sealed proposals for furnishing from 8,000 to 10,000 barrels of Portland cement, for use in connection with the Klamath irrigation project, Oregon and California.

Particulars may be obtained by application to the Chief Engineer of the Reclamation Service at Washington, D. C., or to the office of Supervising Engineer J. B. Lippincott, 1108 Union Trust Building, Los Angeles, California.

Payette-Boise Project

The construction of the Payette-Boise reclamation project will begin at a very early date. At the present time the Secretary of the Interior is advertising for bids for 14,000 barrels of Portland cement, to be delivered f. o. b. cars at stations within a radius of twenty-five miles from Nampa, Idaho. These bids will be received by the Supervising Engineer at Boise, Idaho, until 2 o'clock, March 9, 1906.

Reclamation in New Mexico and Texas

On December 2, 1905, the Secretary of the Interior allotted the sum of \$200,000 from the Reclamation Fund for the immediate construction of the

Leasburg diversion dam and canals in connection with the Rio Grande project, New Mexico and Texas, on the condition that the return of said sum be guaranteed by the land owners. The prescribed conditions of repayment in two years having been found impossible of fulfillment by the owners of lands, the Secretary has rescinded this requirement and directed that the usual form of contract be entered into with the water users' associations guaranteeing the return to the government of all expenditures made under the terms of the Reclamation Act, which allows for ten equal annual payments.

The Reclamation Fund

The present status of the Reclamation Fund, composed of all moneys received from sales of public lands in certain states and territories, is shown in the following table:

State or Territory.	Reclamation fund, by States, received in 1905.	Total Reclamation fund.
Arizona	\$30,368.46	\$216,772.32
California	498,488.37	2,470,396.58
Colorado	318,546.14	1,909,713.70
Idaho	383,221.74	2,028,731.29
Kansas	30,423.91	128,273.49
Montana	349,529.75	2,098,532.65
Nebraska	179,138.10	657,109.52
Nevada	11,167.70	59,321.11
New Mexico...	133,243.57	533,445.83
North Dakota...	807,792.48	4,213,892.62
Oklahoma	490,629.78	3,042,767.11
Oregon	610,797.39	4,841,457.14
South Dakota...	217,688.34	960,468.94
Utah	77,662.81	380,013.84
Washington	451,773.36	3,187,136.34
Wyoming	193,045.49	1,070,299.37
Total	\$4,805,515.39	\$27,818,351.85

Reclamation Work—River Improvement

Many prominent writers in the Mississippi valley seem quite unable to understand the difference between the appropriations made for the reclaiming of arid lands and those for the improvement of rivers and harbors. There is a disposition to criticize Congress for permitting the expenditure of millions in making habitable and

productive vast areas of the public domain now worthless, and at the same time cutting down the appropriation for work on our national waterways.

Apparently the fact has been overlooked that Congress has never made an appropriation of any specific sum for reclamation. On June 17, 1902, a law was passed setting aside the proceeds from the sales of public lands in certain western states and territories for the construction of irrigation works within their borders. The law at the same time provided that every dollar so expended should be returned to the government by the settlers who take up the lands reclaimed. In other words, the nation made an advance of the receipts from the sales of certain public property to make marketable other public property. Out of the many millions expended by the government in river and harbor improvements, not a cent has ever been returned directly to the Treasury, nor was it expected that any return would be made.

The difference in the two kinds of appropriations here mentioned is so obvious, however, that comparisons for the purpose of criticism are unfair. The western beneficiaries under the Reclamation act are suggesting that if the sections so strenuously demanding appropriations for river and harbor improvements would indicate a willingness to reimburse the government for these expenditures, Congress might be more inclined to favor their demands.

Testing Red Fir

The mechanical tests of red fir, which the Forest Service has undertaken in co-operation with the University of Oregon, are now under way. Mr. J. F. Knapp, of the service, reports from Eugene, Ore., that the necessary machinery and accessories needed for the tests have been installed in the laboratory. The object of the experiments will be to determine accurately the effect of knots and other defects upon the strength of large sticks of red fir, with a view to furnishing data which

may be used for the inspection and improvement of specifications.

The material for the tests is to be selected from the mills of a lumber company near Eugene, and will consist of sticks 8 by 16 inches and 5 by 8 inches in cross section. The sticks will be mainly merchantable and seconds, according to the Pacific coast standard rule for grading, but will include a few "selects" of a rate of growth corresponding to the sticks containing defects. Most of them will be tests green, but an occasional specimen will first be air-dried.

Forest Cover on Water Sheds

That the value of forest cover on watersheds used for power and irrigation is now realized and fully appreciated is strikingly shown in southern California, where the Pacific Electric Company has asked the Forest Service to make a preliminary examination of the watershed of the San Luis Rey River in San Diego county, which they plan to develop. The waters of the San Luis Rey River now run to waste; but by constructing flood and storage reservoirs and reforesting the denuded slopes, enough water can be developed to furnish electric power for a new system of suburban trolley lines in the vicinity of San Diego and connecting that city with Los Angeles. Besides furnishing this electric power, the water, after it passes through the turbines, will be used for the reclamation of the lower valley of the San Luis Rey River. The preliminary work of the Forest Service will be to examine this watershed and ascertain the portions in need of reforestation, and to outline the general procedure in preparing a definite plan for forest planting on these areas. Mr. G. B. Lull, who is now stationed at Los Angeles, will do this preliminary work.

Land Withdrawals Effective

The attorney general of the Department of the Interior has decided that the lands within the former Ft. Buford Military Reservation, which are included in the area withdrawn for the Lower Yellowstone project, are not

subject to disposal under the act providing for the disposal of abandoned military reservations.

These lands were restored to the public domain by the act of May 19, 1900 (312 Stat., 180), which provides that they shall be subject to disposal under the homestead, townsite, and desert land laws. It provides that the actual occupants thereon upon the first day of January, 1900, shall have a preference to make one entry not exceeding one quarter section; that lands occupied for townsite purposes and lands shown to be valuable for coal or minerals shall be subject to entry and sale under the townsite, coal and mineral land laws, respectively.

The practical effect of the act of May 19, 1900, was to restore the land to entry under existing laws, except such laws as are not specifically named. These lands are, therefore, subject to withdrawal under the Reclamation Act as portions of the public domain which are subject to entry under the general land laws. The withdrawal made by the Reclamation Service is therefore effective and all the lands included and entries thereof are subject to the limitations and restrictions of the Reclamation Act.

Telephones in Forest Reserves Since July 1, 1905, the Forest Service has approved the construction of 154.65 miles of telephone lines through various forest reserves. In so doing, the service has arranged, in all cases, to secure to forest officers the free use of these lines.

Now that the telephone is recognized as one of the best safeguards against the spread of forest fires, this arrangement means greatly increased safety to the reserves, secured without expense. By the continuance of the policy, it is believed that in due time a full and adequate telephone system will be built up on the reserves, to the great advantage of the service.

Underground Waters of Great Plains Very widespread interest is being taken in the investigations the Reclamation Service is making of the feasi-

bility of developing the underground waters of several portions of the Great Plains area. It is recognized that if the Garden City project in Kansas proves a success that private capital will immediately take up the work in other sections. There are many people in the east, especially in the New England states, who are deeply concerned in this work.

During the days of the "rain-belter" a great wave of immigration swept over vast areas of western Kansas and Nebraska. For a year or two rainfall was abundant and prodigious crops were grown. Easterners, allured by the high rates of interest, invested their savings in mortgages on these farms. A cycle of dry years came, the settlers vanished, and the mortgages were foreclosed. A considerable amount of this land is still the property of New England school teachers, merchants, and farmers, and their interest in a proposition of reclamation is obvious.

A large part of the Great Plains area is underlaid with a thick stratum of water-bearing gravel. The investigations of the government show that the water supply is enormous, and if it can be cheaply lifted into distributing ditches, will insure the reclamation of many thousands of acres of land of exceptional fertility.

The government project in Kansas is a small one, only 9,000 acres; but upon its successful operation may depend the future development of an area equal to several eastern states.

Studying Gum Mr. H. B. Holroyd, of the Forest Service, is in Louisiana at the request of the Southern Cypress Manufacturers' Association, to make a preliminary study of the conditions necessary for the seasoning of tupelo gum, with which manufacturers have not a little difficulty, owing to the tendency of this wood to warp and twist. Though of a distinct genus, tupelo gum shows much similarity in this respect to red gum, which for some time offered much difficulty in the process of dry-

ing. Indeed, red gum has only recently been handled with sufficient success during seasoning to render it a reliable wood. It is believed that with due care the troubles with tupelo gum may be overcome as successfully as has been the case with red gum, with regard to which the Forest Service recently published a bulletin dealing both with the commercial uses and with the mechanical properties of the wood.

not quite, four billion feet of standing tupelo on the lands of the association.

Foresters for Reserves

It is the intention of the Forest Service to add a trained forester to the executive force of each forest reserve. This is to introduce practical forestry on all the reserves. In addition to his general duties he will act as a technical assistant in mapping, estimating,



Detail View of Complete West Entrance of Tunnel just below Shoshone Dam Site on Canyon Road, Shoshone Project, Wyoming

Tupelo gum occurs through the coastal region of the Atlantic states from Virginia to northern Florida, through the gulf states to Texas, through Arkansas and southern Missouri to western Kentucky and Tennessee, and to the valley of the Wabash River. It grows only in swamps and wetter situations, often in mixture with cypress and, in rainy seasons, stands in from six to twenty feet of water. There are said to be almost, if

and disposing of the timber. For this purpose the following appointments of forest assistants have just been made: R. P. Imes, to assist Supervisor Seth Bullock in the Black Hills Forest Reserve in South Dakota and Wyoming; E. H. Hereford, to assist Supervisor Fred S. Breen in the Black Mesa and Grand Canyon Reserves in California; and A. R. Powers, to assist Supervisor L. A. Barrett in the Plumas Forest Reserve, California.



Cascades near Head of Catawba River.

There are hundreds of Cascades as beautiful as this in the Southern Appalachians. As long as these mountain forests are preserved these streams have a regular flow; united they furnish the water powers which operate the factories valued at increasing millions.

INDIVIDUAL RESPONSIBILITY vs. COMMISSIONS*

How Methods in Vogue Under National Reclamation Act could
be Adapted to Advantage in Construction of the Panama Canal

BY

HON. FRANCIS G. NEWLANDS

United States Senator from Nevada.

I THINK it is conceded by all men connected with great corporate enterprises that the responsibility of a great work must be individual; that it must be put upon one man; that that man must appoint his assistants for the different branches of the work and hold them responsible to him, and that these assistants in their various areas of control shall pursue the same method.

At the very start we did not individualize this responsibility. It is true we intrusted the work (of constructing the Panama canal) to the President, but instead of giving him a free hand in organization we instructed him that he should do this work through a commission, and we ourselves designated in great part the personnel of that commission. We provided for a commission of seven. I think that was a mistake. I think we should have put upon the President of the United States the responsibility for this work; that we should not have permitted him to share that responsibility with any commission of this kind. We should impose upon him the duty of appointing his own subordinates, individualizing responsibility everywhere as far as possible.

It is not to be wondered at that we should make mistakes in organization at first, for the United States government has not been accustomed to great works of construction. We are now entering upon an era of construction, and I believe the area of our work in

that particular will increase until it finally embraces governmental public utilities which are not now dreamed of.

The only other great work of construction upon which we have entered was entered upon under a law passed almost simultaneously with the act under which the President is acting, and that was the irrigation law. There we individualized responsibility. We shaped a most comprehensive bill; provided a fund from the sale of public lands through which construction should be conducted, and provided a revolving fund so that the money could be used over and over again as the lands reclaimed were sold.

But he gave the Secretary of the Interior full power to execute the law, and he placed no limit upon that power except that he should not make a contract for construction unless the money for its payment was actually in the fund.

What did the Secretary of the Interior do under that act? He referred the administration of the act to the Geological Survey, a scientific branch of the government which for years has been engaged not simply in geological research, but in the study of everything that relates to the topography and resources of the country, to our mineral deposits, to the measurement of streams, to the control of streams for navigation as well as irrigation, and which, during the formative process of the irrigation agitation, had been engaged in making plans for the

*From a speech delivered in the United States Senate, Dec. 16, 1905.

great work that was subsequently to be entered upon.

The director of the Geological Survey has demonstrated administrative capacity of a very high character. Although his special scientific specialty was the examination of fossils, yet the expanding area of his bureau had turned him gradually into a great administrator. His capacity has been recognized by Congress, by our appropriations committees, and by all who

the responsibility of their acceptance or their rejection.

Under him is Mr. Newell, a graduate of the Massachusetts Institute of Technology, a man who entered the service when he was very young, an enthusiast on the subject of irrigation, and who during fourteen years' patient investigation and patient work has been preparing for this great work of construction. Those are the two men upon whom the responsibility for this work centered.



Hon. FRANCIS G. NEWLANDS
United States Senator from Nevada, one of the foremost exponents of National Irrigation.

have been brought in contact with him by a prompt acquiescence in almost everything he has asked. He has been termed in this body the greatest getter of appropriations in the service of the government, and he has been direct and straightforward, has presented his plans clearly, and without urgency, and has placed upon the committees of the Senate and the House themselves

Now, what did they do? Select commissions to divide responsibility as to administration? Not at all. They drew into the force gradually the men who had distinguished themselves all over the country as topographers, as hydrographers, as hydraulic engineers, as constructing engineers, and the result is that today we have in the employment of that service a number of

scientific men of large practical experience, a body that is unsurpassed by that in the employ of any other government in the world.

Now, let me say right here that it seems to me that the Panama canal involves the same problems that are involved in the construction of irrigation works. You may call it a simple problem as compared with the construction of all the irrigation works that are contemplated in this country. The work of investigation and planning now embraces fourteen states in this Union. The topography of the country has been studied, stream measurements have been made, surveys of canals and ditches have been made, dams have been planned, reservoirs have been provided for, and they are almost ready for construction, and some are already commenced, and some have been finished. The Panama canal involves the same work. What have you there? A line only forty-seven miles long. The irrigation work embraces the entire arid region, consisting of thirteen states and three territories. The canal is forty-seven miles long. As you proceed from Colon, the canal runs through a flat country for fifteen or sixteen miles, the government availing itself for a part of that distance of the Chagres River as a part of the canal. Then comes the Bohio dam, 80 feet above the surface of the land, and about 150 feet down to bed rock. Then you have this artificial lake as the result of the dam, which is to receive the flood waters of the Chagres and hold them, so that they will not tear the banks of the canal below.

Then we have the reservoir reinforced by other reservoirs upon the Chagres River, intended to control the violence of the stream. The Bohio reservoir is about 14 miles long. With 15 miles of the canal through the almost level plain to Bohio and the 14 miles of the Bohio reservoir you have a distance of 29 miles of the 47 miles completed. Then, farther to the south, you have the Culebra cut of about 10

miles, which is to be cut to a depth of from 66 to 80 feet, according to the number of locks employed. Then you have another level space, or almost level space, to the Pacific ocean, about 8 miles, making in all about 47 miles.

Now, this service involves exactly the same problems on which the employees of the irrigation service have been engaged for fourteen years. It involves study of the geological formations, careful stream measurements through a series of years, so as to ascertain the extent of possible floods and prevent the destruction caused by such floods. It involves dam construction, ditch construction, and canal construction, just as in the arid region, and it involves protecting canals.

Now, let us see whether it would not have been wise for the President to have had a free hand to take hold of this scientific branch of the government, which is an evolution of fourteen years, which had an administration already accomplished whose experience covered these various problems, instead of reaching out for a new administration, to be accomplished not by the aid of hydraulic engineers, but to be accomplished by the aid of railroad engineers inexperienced in hydraulic engineering.

The Bohio dam is about 80 feet high above the surface, though its foundation is to go down 150 feet to bed rock. Its length is 3,800 feet. That is a very long dam, of course, but at the Salt River in Arizona the United States government is now constructing, under the Reclamation Service, a dam 270 feet high and 800 feet in length. It is also constructing the Shoshone dam, 310 feet high, with a length of 200 feet. It is constructing the Rio Grande dam, 255 high, with a length of 1,150 feet. That dam is to be constructed at a total cost of \$5,115,000 whilst the Bohio dam at Panama will cost about \$6,000,000.

Now, I ask, would it not have been better to have intrusted this work to that branch of the government which has been built up through the slow

process of evolution and which has now in its corps, either by direct appointment or as consulting engineer, every man in the country who has distinguished himself in hydraulic engineering.

Then as to tunnels. The irrigation service is now constructing the Gunnison tunnel, of a length of 6 miles—a tunnel 10 by 12 feet—and of that tunnel a mile is already completed. Recollect that the irrigation act was passed almost in the same month that the Panama act was passed. The irrigation committees of the Senate and the House visited the various projects during the last summer, and we had opportunity of observing the quickness and extent of the work, and we were amazed at the progress that had been made in the short space of three years.

At the same session of Congress a bill was passed for the construction of a post office building, to cost fifty or sixty thousand dollars, in the city of Reno, Nevada. That building is not yet constructed—the foundations are not yet laid; and yet the Reclamation Service has during the intervening period expended over \$2,000,000 in reclamation work in Nevada; has diverted the Truckee River, a stream of floods during certain seasons of the year, a distance of 30 miles by a new river over into the Carson valley; has constructed dams and locks and all the hydraulic machinery that was necessary to make that enterprise effective, and the water is now being turned out upon the soil.

Now, what salaries are paid these men? Mr. Walcott receives \$6,000 a year. He could, in my judgment, because of the value of his services as an administrator, get a very much larger sum in outside employment, but he feels, as I observe most government employees do, and particularly those relating to the scientific branches of the government, a personal pride in his work. The commercial spirit does not entirely possess the men who are in the employ of the Geological Survey. They are content with reasonable

compensation, and you could not tempt them from government employ by the offer of larger compensation.

I know one distinguished engineer who has been employed in the great private enterprises of the West in irrigation construction who accepted from the United States government a salary about one-third that which he earned in private practice, and he accepted it because he wished to identify his name with a great engineering work in which he was interested. The *esprit de corps* of this particular branch of the service is most marvelous. We men of the West have had opportunities of observing it. We have every year in the West an irrigation congress, composed of about a thousand men, deriving its membership from each one of the arid and semi-arid states. The last congress I attended was in El Paso. The one previous to that was at Ogden. This convention of a thousand men was attended also by the engineers and hydrographers and the expert men of the Reclamation Service. They have annually a congress of their own, in which these engineers, coming from various parts of the country and engaged in different projects, present to the judgment of their associates in the congress their several projects, invite criticism, and ask judgment. To these conferences members of the irrigation congress were invited, and the result is they have been a great educational power in the West. Forty or fifty delegates from every state who attend that congress go back to their states familiar with the plans of the government. They become informed through these expositions that take place and they form an educational force in every state, and, so far as the engineers are concerned, they feel the sustaining power of the people themselves in that great work.

Now, this demonstrates that the government can get men for much less compensation than obtains in commercial life. Mr. Walcott gets \$6,000 a year; Mr. Newell gets \$5,000, and he

is chief engineer, and no one of the noted engineers under him gets, I believe, more than \$4,000 or \$4,500. The salaries of the engineers range from \$2,200 up to \$4,500. The only exception is Mr. Grunsky, formerly of the canal commission, who has been assigned by the President to the position of consulting engineer, at a salary of \$10,000 per annum.

It would have been very easy, simply by an extension of this service, to have taken the Panama canal within the area of its work, involving exactly the same problems that this bureau has been devoting itself to for fourteen years, and in which it has accumulated an experience that no set of men, however great their capacity, can acquire in a short time.

I do not question the ability of the engineers who have been employed in this work, but I do contend that almost all of them—I may say all that have been brought to my attention—have been engaged in railroad construction and not in hydraulic construction. Railway engineering is comparatively easy. It consists simply in surveys of the right of way, in adopting a certain standard of grade, in constructing tunnels and bridges across streams; whereas hydraulic engineering, as conducted in the West, involves all the things that are embraced in the construction of the Panama canal, except possibly the question of sanitation.

Now, let me show what the Reclamation Service has done during these three years. It has built 77 miles of main canals. These main canals have the size of rivers. You would be amazed at the magnitude of some of those works. It has built 50 miles of distributing canals. It has built 186 miles of irrigating ditches, 150 miles of telephone, 125 miles of road in canyons, involving deep rock cuts; $3\frac{1}{2}$

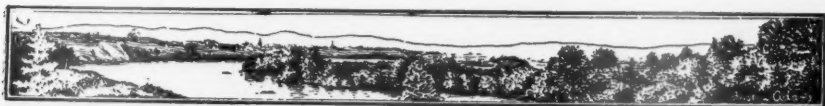
miles of tunnels. It has excavated 10,000,000 cubic yards.

In one of their works, at the great Salt River dam, a dam which is to be constructed of cement and stone, they found they were held up by the cement trust. What did they do? They set their geologist to work, and the geologist discovered very near the site of the dam material admirably suited to make cement. And so they put up, at a cost of \$100,000, a Portland cement mill, and there they are making cement at a great saving to the government. I cannot recall exactly the figures, but it is a very large sum.

Work is now going on in eleven different projects in as many different states, and they are now constructing the Shoshone dam, the Pathfinder dam, the Roosevelt dam, the Laguna dam, the Belle Fourche dam, the Gunnison tunnel (6 miles long), and 12 miles of ditches on the Colorado River.

So this service is moving along quietly, unobtrusively, in a businesslike way, under this system of individual responsibility. Mr. Newell, the chief engineer, is responsible to Mr. Walcott, the director of the Geological Survey, and Mr. Walcott, the director of the Geological Survey, is responsible to the Secretary of the Interior; and I believe that this work will be one of the crowing glories in the history of this republic.

But even if the service of the irrigation survey should not be employed, even if its accumulated experience and information should not be tapped in this way in this work of identical character, it does seem to me that we should give the President of the United States a free hand, so that he can, if he chooses, turn over this work to the Geological Survey, or so that he can, if he chooses, adopt the system of individual responsibility to which I have referred.



THE RISE IN LUMBER PRICES*

BY

R. S. KELLOGG

U. S. Forest Service

OURS is pre-eminently a wood-using civilization, and aside from food and clothing, no material is so essential to industrial progress as wood. Nature provided us with immense areas of easily accessible, highly valuable forests, and we have drawn upon them with so lavish a hand for every conceivable purpose that we are loath to believe that the time is rapidly approaching when our remaining forests must be handled *constructively* and not *destructively*; or else wood of the higher classes will be obtainable only in insufficient quantity. According to the Census of 1900, which was admittedly incomplete, we were then using annually thirty-five billion feet of lumber, and now the amount is probably nearing fifty billion feet. Yet how many of you ever stop to consider that the lumber cut is much less than half of the total annual drain upon our forests? The pulp mills take some 2,000,000 cords of wood yearly, the tanneries 1,500,000 cords of hemlock and oak bark, the cooperage industry a vast amount of timber, the railroads about 115,000,000 ties for renewals alone, and then there are millions of posts and poles to be added to the total before we even come to the half of our wood consumption. The Census of 1880 showed that the wood used for fuel, at that time, amounted to 146,000,000 cords, and there is no reason to suppose that, despite the great increase in coal consumption, the 85,000,000 people of 1906 are burning less wood than did the 50,000,000 of 1880.

All these items, huge though they be, belong to necessary demands upon the forest. We are a rapidly growing

nation, and we have seized upon every available resource to aid in our growth. Though the forests have been destroyed, they have yielded rich returns. Yet there is another drain upon them, which has been wholly harmful. This is fire. As a single example: The Secretary of the Pacific Coast Association recently stated that during the last fifty years there has been 900,000 acres more timber burned over than cut over in Oregon.

In the early days New England was the great lumber region. Then came the Lake States with their supposedly "inexhaustible supply" of timber. This was said 30 or 40 years ago. Now, Michigan is a practically negligible factor in white pine. Wisconsin is on the wane, and it will not be many years until Minneapolis and Cloquet cease turning out a million and a half feet each daily during the sawing season. Southern yellow pine is at present furnishing in the neighborhood of 30 per cent of the total lumber supply, but it in turn will yield to the Pacific Coast woods; and we have finally come to the realization that the so-called "inexhaustible supply" is a pleasing, but most dangerous misconception. Exploitation has been so easy, invention has supplied so many ingenious methods of converting trees into lumber, that the output from a given region is maintained at a high level until the supply is close to the point of exhaustion. We are nearer a halting place than most of us realize.

What is the condition confronting the lumberman and the user of his products to-day? Dr. Fernow states that an "extravagant estimate" of our stumpage is not over two trillion feet,

*Paper read at the sixteenth annual meeting of the Southern Lumber Manufacturers' Association at New Orleans, January 23, 1906.

standing on some 500,000,000 acres. At the present rate of sawing this will be cut in forty years. This does not mean that forty years hence there will be no more timber to saw, but it does mean that there must come a great readjustment to new conditions by both the manufacturer and the user of forest products. So far we have been drawing on the *older* trees in our forests, or cutting virgin stands anywhere from 100 to 500 years old. In other words, we have been paying dividends out of our capital stock, and no good business man will do that. In the near future our wood must be supplied by growth and reproduction, and the now commonly despised "second growth" will come to be our source of supply.

Going back to our estimated forest area of 500,000,000 acres, let us see what can be done with it. Of this 500,000,000 acres, the government has nearly 100,000,000 acres in national forest reserves, but a considerable portion of this area lacks forests of any value for lumber. Four-fifths of our forest area is in private hands and quite likely will remain so for at least a long time to come. The highly managed forests of Germany grow, on an average, about 50 cubic feet of wood per acre annually. Were our forests in the condition of the German forests, their extent is barely sufficient to furnish by annual growth the amount of wood we now use. As a matter of fact, the annual growth of our forests as a whole, under present conditions of abuse, is probably not more than one-fifth that of the German forests.

These, then, are the conditions as nearly as can be estimated to-day. It does not require any special gift of prophecy to outline what will follow. We will undoubtedly go on in the same old wasteful, extravagant way, for some years yet, until there comes a stern realization that things must change. And when I say a "stern realization," I mean one which is caused by a greater scarcity of stumpage and a much higher price for lumber than now exists. Then we shall begin to

husband our resources, and make one board do where we now use two. Undoubtedly, we are approaching the maximum of our annual consumption of forest products, and hereafter, the great increase will be in *value* instead of *quantity*. It is entirely possible for us to use less wood and we shall do so when we have to. We are consuming some 500 board feet of lumber, per capita, annually, where Europe uses but 60; and if we were forced to import 80 per cent of our wood supply as does France, or practically all, as does England, we should quickly learn how to economize. We are not likely to reach this extreme condition, but we may be sure that prices will advance until consumption is finally forced down to somewhere near the annual accretion of the forests that are left at that time.

I do not decry high prices, much as the country has benefited by low prices for lumber. I recognize the fact that in general the lumbermen have operated as economically as they could under prevailing conditions, and while it is fashionable to condemn them for destroying the forests, they have done so only because of economic demand, and their critics would have behaved no better under the same circumstances. But the forests will not be handled rationally until they become valuable, until there is money in handling them that way; and so I say that from the standpoint of the forester, high prices for lumber are a good thing, because they make it profitable to utilize the forests rationally and economically. One of the prominent Pacific Coast lumbermen recently advised his associates to "slab lightly, reduce your saw kerf, and keep your eye on the burner." Carrying this a little further, it will not be long until the slabs are resawed and the burner abolished entirely, as the white pine manufacturers are now doing.

In view of these conditions, there is nothing really surprising in the fact that in the last twelve years the price of rough white pine uppers on the

Buffalo market has risen from \$47 to \$91, or 94 per cent; that select cypress on the New York market has risen from \$30.50 to \$42.40, or 39 per cent; that hemlock, Pennsylvania stock, at New York, has risen from \$11.40 to \$22.25, or 95 per cent, and that according to your price lists, "A" flat-grain yellow pine flooring was quoted at \$16.50 in 1894, delivered on a 22-cent rate, and at \$29.50 in December, 1905, delivered on a 23-cent rate, or a raise of 77 per cent. Of course, I understand that there are a number of factors entering into the case, and am not overlooking the influence of the general rise in the price level during the past few years, the abundant crops,

and the great building activity, but it requires more than these things to explain why it was that your Committee on Values issued six price lists in the effort to keep up with the market last year, and that there is little sagging in the latest list during this winter. It is entirely possible and even likely that there will be temporary halts and even depressions in prices of lumber, but there is every reason to believe that the upward course shown by the price-curves for the last dozen years is but the beginning of a general advance which will continue until an equilibrium between the demand for wood and the amount available for the yearly cut is reached on a far higher price level than at present.

A HISTORY OF THE LUMBER INDUSTRY IN AMERICA

The first volume just published is an exceedingly valuable work for which all interested in the wise use of our forests owe the author a debt of thanks

BY

TREADWELL CLEVELAND, JR.

U. S. Forest Service.

THE publication of Mr. J. E. DeFebaugh's "History of the Lumber Industry in America" is an important event in the world of forest interests. This is the first book in its field, written and compiled in a large, scholarly way by one of the few authorities eminently fitted for the task. And the task has been an unusually difficult one. The sources on which it is based are scattered. Only indefatigable pains and a persistent devotion to his subject could have enabled the author to accomplish it even indifferently. He has accomplished it so well that, even were his long activity as editor of *The American Lumberman* to be forgotten this volume would unquestionably give his name a permanent place in

the history of one of our largest industries. Though necessarily in large part a compilation, the history is in a true sense an original work, the well-planned product of a practical and philosophic mind.

Perhaps the first point which favorably impresses the reader is the historian's point of view. This proceeds from a firm grasp of the relation of economics to history and of the part which the forest has played in the economic progress of the world in general and of the New World in particular. What this means is well brought out in the thoughtful preface. After emphasizing the suggestive fact that "industry and commerce have received in the past but incidental recognition

from the historian," Mr. Defebaugh writes: "Despite this neglect, commerce has always been a controlling factor in making the world's history. It has always been more important that men should live than that they should live under any particular government or at any particular place." * * * "Out of this new appreciation have come histories of particular industrial movements and of numerous branches of industry; but notwithstanding the influence of the forests on the New World development and the importance of the present lumber industry of the United States, Canada, and the Latin countries to the south, no comprehensive history of the lumber industry of America ever has been compiled."

Chapter I, devoted to the discovery and settlement of the country, emphasizes the dependence of civilized pioneers upon forest resources. "Civilized man lives in houses, and as the house that does not contain wood in some form is practically unknown, the lumber industry accompanies civilized man in all his migrations and progress." * * * "A treeless world might not be uninhabitable, but it is an historical fact that migration, racial progress and growth of population have been guided by the forest distribution of the world—modified, of course, by other considerations, but having that as one of their chief controlling influences." * * * "Whatever the cradle of the Aryan peoples may have been, their migrations led them by forest routes to forest countries."

Chapter II deals with the forest geography of the North American continent. It includes a consideration of the conditions which govern the growth and distribution of tree species, with the influence of past conditions as shown by geology and known climatic changes, and a list of the commercial tree species of America. Mr. George B. Sudworth, of the Forest Service, is the authority which the author follows, with due acknowledgment, and in giving the names and dis-

tribution of tree species Mr. Sudworth's "Check List of the Forest Trees of the United States" (Bulletin No. 17 of the Division of Forestry) is reprinted in substance.

Beginning now with Labrador and Newfoundland, Mr. Defebaugh, in the next succeeding chapters, describes the forests and forest history of this region, of Canada as a whole, and of Quebec, Ontario, New Brunswick, Nova Scotia, and the District of Ungava. In each case the value of the



MR. J. E. DEFEBAUGH

Author of *History of "Lumber Industry of America,"* Editor of the *American Lumberman*, and one of the most practical and efficient exponents of American forestry.

forest products is shown in historical tables; such legal provisions as exist to regulate forest use and to secure forest protection are sufficiently outlined; and the development of the lumber industry is traced. Naturally enough, the American reader turns, however, with some patriotic impatience to page 272, at which the author takes up the forest resources of the United States. This opens Chapter XXVI, in the first few paragraphs of which Mr. Defebaugh has ex-

pressed a judgment to which the trained forester will give enthusiastic assent. It is a good thing, indeed, that sentences so significant should have been written by a lumberman whose opinion carries weight and that they should have been given permanence in our forest literature:

"The beginning of the Twentieth Century marked, with approximate accuracy, an epochal period in the timber and lumber history of the United States of America. Until that time the country, in its use of forest products, had been drawing upon a surplus, but thereafter a continuance of production on the former scale, without care for the perpetuation or reproduction of the forests, necessarily would draw upon the capital fund, so to speak, with the inevitable result of a growing scarcity of forest products, or, to be more exact, of an increasing and manifest deficiency in the supply of standing timber from which the product must be secured." * * * The forests were formerly, "especially during the period of development up to about 1850, in many instances a positive detriment. Forests stood on millions of acres of fertile lands which were needed by the settler and the would-be farmer, and a slow-growing crop of timber was occupying land that might more profitably be devoted to the production of grain or other products of agriculture." * * * "But the best informed students of the subject believe, after as careful investigation as they have been able to make, that the forest yet remaining, if operated along conservative lines, would annually pro-

duce in perpetuity an amount of forest products little, if any, more than the present annual output. If that be true, the United States has come to the point where it can no longer be lavish in its use of its wonderful timber resources, but must rigorously conserve them. It will no longer be consuming a surplus, but, except for the adoption of forestry methods, will be drawing upon its capital."

That this judgment is safely on the conservative side may be seen by recalling Dr. B. E. Fernow's figures, in his capital book "The Economics of Forestry." According to these, even with the per acre annual growth of the average German government forest—50 cubic feet—our 25,000 million feet of consumption would take all we could grow on our estimated total productive forest area of 500 million acres. As it is, Dr. Fernow will not allow that our untended forests are growing more than one-tenth as fast as this; so that consumption is gaining on present supplies at a rate which would, if continued, drain them to the dregs in from 40 to 50 years.

The closing pages of the "History" are made up of most useful statistical tables giving the course of timber production and the use of forest products, as well as a review of tariff legislation affecting the lumber industry.

Mr. Defebaugh and his publishers are to be congratulated on this uniquely serviceable volume. It is to be hoped that the remaining volumes may follow without too great delay, and that they may not fall short of the expectations encouraged by this one.



ENDORSEMENT OF MINNESOTA RESERVE

Memorial by the Commercial Clubs of Minneapolis and St. Paul calling for the preservation of this important Reserve

IN the year 1889, there was passed by Congress an act, known as the Nelson Law, in fulfillment of the treaty with the Chippewa Indians of Minnesota, by which they ceded their land and timber to the United States. The operation of this law was attended with so much unnecessary expense that in 1899 the Indians were actually indebted to the government.

A sale of timber on the reservations at Cass and Leech Lakes had been advertised for May 15, 1899; but dissatisfaction with the law, public agitation for the creation of a National Park, and unwillingness of lumbermen—due at that time to a tight money market—to bid upon the timber, caused the state legislature upon February 20, 1899, to petition the Secretary of the Interior to postpone the sale, which was done on March 1, of the same year.

A three-years struggle then ensued to determine what the character of the new legislation should be. The National Park advocates wished the whole area set aside for public use, while the lumbermen contended with reason that this was impossible, and urged instead the carrying out of the treaty stipulations with the Indians, by the sale of the pine.

Meanwhile large quantities of timber were being cut under a clause of the Nelson Law inserted in 1897, whereby the Indian agent was allowed to sell dead or down timber, to prevent its being wasted. Thousands of feet of green pine were cut in defiance of the spirit of the law; and in the winter of 1900 further operations began in spite of the written protest of the State Federation of Women's

Clubs and other organizations, which resulted in a scandal and caused the Secretary of the Interior to discontinue this feature of the law.

In the fall of 1901 Representative Page Morris, of Duluth, introduced in Congress the first draft of what has ever since been known as the Morris Bill, providing for the sale of pine and the settlement of the lands. The public clamor which this aroused was so strong that Mr. Morris decided to modify his bill and to arrange a compromise, upon which the Minnesota Congressional delegation could unite. At a conference at which Mr. Gifford Pinchot, Chief of the Forestry Bureau at Washington, was present a new draft of the Morris Bill was formulated, to which the entire Minnesota Congressional Delegation, of both Houses of Congress, agreed. Delegates from the town of Cass Lake were also present and agreed to stand by the compromise bill, as formulated at this conference; and that bill was passed, chiefly through the efforts of Senator Clapp, and became and has ever since been known as the Morris Law.

In all respects this bill was a remarkable measure. Under it the timber, instead of first being estimated and then sold on the stump, is scaled and sold on basis of the actual quantity cut. The increase in scale over the old estimates averages more than 25 per cent; the minimum price, receivable for the pine, was raised \$1 per thousand, being fixed at \$4 for Norway pine and \$5 for White pine, as against \$3 and \$4 respectively. Again, the bill provides for the timber to be sold under sealed bids, instead of by

open bidding, thus preventing collusion; and dead and down logging is, under the bill, abolished.

Under the old law, the pine land itself had been given to the lumbermen

have received, or will receive, from two to three times as much cash, from the sale of the land and timber, as they would have received under the old law. Their total receipts will probably reach



—St. Paul Pioneer Press.

with the purchase of the timber; under the Morris Bill, all not reserved for the Forest Reserve is to be sold for the benefit of the Indians. The result of these provisions is, that the Indians

to the neighborhood of \$10,000,000.

The compromise clauses, by the insertion of which the bill was passed, were the so-called Park and Forest Reserve clauses. The Park clause pro-

vides that the islands in Cass and Leech Lakes and an additional quantity of land, equivalent to ten sections, to be selected by the Forestry Bureau, should be reserved from sale or settlement and set aside as a National Park of virgin timber for public use.

The Forest Reserve clause provides that 225,000 acres of land be permanently retained by the United States government for a forest reserve; and that upon this land 5 per cent of the timber of merchantable size shall be left standing in order to furnish seed trees for a second growth of pine seedlings.

THE OPERATIONS OF THE MORRIS BILL.

The system of scaling provided by the Morris Bill and the integrity of the Indian agent, Major Scott, has insured to the Indians a full and honest scale of their timber. The Forest Reserve administration was placed in charge of Eugene Bruce, a lumberman of many years' experience, under whose strict but reasonable enforcement of the law its provisions have been carried out with the utmost success. One of these provisions requires that the treetops left from logging be piled and burned. The lumbermen originally insisted that the cost of such work would be at least \$2 per thousand feet and would seriously affect the prices bid for the timber; but events have proved that the work could be done from 10 to 25 cents per thousand, and the confidence of the lumbermen has been such in Mr. Bruce's administration that instead of the timber bringing less than formerly the prices received amounted in some instances to \$12 per thousand feet, the highest price paid for timber at public auction in Minnesota up to that time, and averaged over \$6 per thousand feet.

The five per cent of seed trees, which were selected especially for their firmness of root and power of resistance to wind, were saved without injury either from the cutting of the surrounding timber or by the sub-

sequent burning of the brush, and only fifteen per cent by actual measurement of these isolated seed trees have been blown down, notwithstanding that during the summer of 1905 two unusually severe storms occurred and that the danger of blow-down, after the surrounding timber had been cut, was very great. Indeed more timber was blown down in the virgin forest than among these seed trees.

The reproduction of the pine will depend wholly upon the ability of the Forest Service to protect the land from fire. The spring of 1905 was very dry. Small ground fires, sufficient to kill young pine seedlings, ran over almost every acre of land, except on this forest reserve. There the efforts of the government forest rangers, eight in number, with the moral support of the government behind them, were effective in extinguishing or preventing all fires, so that the total acreage burned over was less than five per cent of the land reserved.

There is at present a vast number of young pine trees, ranging from seedlings up to forty and fifty-year-old pole timber, growing on the reserved lands. Under ordinary logging operations, every acre of this young growth would have been burned up by the fires, which consumed the slashings; as it is, the appearance of the cut-over lands is pleasing and a future crop of pine already assured.

Thus the lumbermen have found it possible to do business under the Morris Act. Contractors have made large sums logging the pine under these regulations; so that the lumbermen are no longer actively opposed to the bill.

VALUE OF THE RESERVE LAND FOR FARMING.

The opposition to the further continuance of operations of the Morris Bill comes from those who desire that the land now reserved for forestry be opened up to settlement on the ground that it is suitable for farming. Of this land the original field-notes of surveys

made from 1873 to 1876 show that one-half of the upland within these reservations is third-class, sandy and of little or no value for farming. It was the intention of the Morris Bill to embrace within the reservation as large a percentage of these sandy lands as possible, leaving outside thereof all lands of agricultural value; and this policy has been pursued.

While there is some land within the present reserve which might possibly make good farm land, the larger portion has a deep, loose, sandy soil which many years' experience in older farming communities has shown to lack lasting productiveness. The stored-up fertility, which is released when these lands are cleared of timber makes a quick and fertile soil for three or four years; but rains soon wash this plant food deep into the sub-soils; artificial fertilization becomes necessary, but the effect of the application of manures does not last; clover will grow well at first but will not suffice to maintain the productiveness of such deep sandy soil. This worn-out condition does not, however, become apparent to the settlers, who locate upon such lands, until they have exhausted the original capital which they brought with them.

Neither is it generally understood that existing general statutes provide that lands within forest reserves, which are suited to agriculture can be eliminated therefrom; therefore, if there has been included within this reserve land which should be used for farming, it will not be necessary either to amend the Morris Bill or pass any new legislation to eliminate it; but the fitness of such land will be determined by specialists, whose judgment it is believed will be unbiased. Speculators and town-site men, whose only interest often seems to be only to bring in settlers regardless of their future welfare, will not be allowed to influence the selection and elimination of such land from the reserve.

VALUE OF THE SEEDLING PINES.

The value of this small nucleus of a future pine forest becomes apparent, when we consider that before these pine seedlings reach an age at which it will be profitable to cut them for lumber, the entire timber resources of the United States will, according to the best authorities, be completely exhausted. Substitutes for timber, no matter how numerous and effective, have so far failed to lessen the ever-increasing consumption of wood, made necessary by our advancing civilization.

At the American Forest Congress in Washington in 1905, President Roosevelt stated that if the American people did not now provide for a future timber supply, there would ensue, before trees could be grown to large enough size to meet the demand, a period of great hardship and deprivation.

WHAT SHALL MINNESOTA DO?

Shall the State of Minnesota and the nation at large stand aside and allow a small group of speculators, in pursuance of a more than questionable policy, to hinder and perhaps prevent forever the best and possibly the only practical effort now being made in the Mississippi Valley to provide for this future timber supply? The government maintains, upon the head waters of the Mississippi, a costly system of reservoirs to regulate the flow of that stream and to deepen its channel. Last summer, the same selfish interests which are now attacking our forest reserve attempted to bring about the abandonment and destruction of the reservoir system, but failed. The forest reserve supplements the work of the reservoirs; and the same interests, which then so emphatically declared for their maintenance, should now as cordially support the reserve.

MINNESOTA NATIONAL PARK.

Perhaps the most important feature to the people of the Mississippi Valley, as well as to the public of the whole

nation, is the preservation of the park lands upon the shores and islands of Cass and Leech Lakes. Thirty miles of shore line, covered with dense stands of Norway and White pine, embracing scenes of unparalleled beauty, are the heritage to the public bequeathed by the advocates of the old Minnesota National Park idea. The commercial value of this smaller park for the towns of Walker and Cass Lake is as great as is its esthetical value to the public at large. This feature will prove a source of perpetual prosperity and the tourist and other business derived from the mere existence of this park will increase more and more rapidly, as the fame of its beauty and healthfulness spreads. It would be the utmost folly for the people of these towns to exchange their park for the doubtful and evanescent privilege of having settlers take up these sandy lands.

ATTEMPTED REPEAL OF THE MORRIS BILL.

At the last session of the Minnesota legislature a resolution was passed, without debate or reference to a committee, asking Congress that the Morris Bill be repealed. "It is believed that many of the legislators themselves did not realize what the effect might be of the motion for which they voted. The resolution was undoubtedly designed to make it appear that the people of Minnesota were opposed to the Morris Bill and were in favor of its repeal.

THE COMMERCIAL CLUBS' APPEAL.

The Commercial clubs of Minneapolis and St. Paul join in an emphatic denial of the existence of such a sentiment.

In the above memorial they have truthfully set forth the history of our national legislation upon this important subject, the reason for its enactment and the beneficent results which have already flowed from it and which we believe have in reality only begun to appear.

They have given to the whole matter the most careful and intelligent consideration possible; they were in favor of the original passage of the Morris Bill and have just declared themselves as not only opposed to its repeal but also to any modification or amendment of it, except such as may be asked for by the United States government authorities in charge of our forest reserves.

We, the undersigned of this memorial, do most urgently request the co-operation of all commercial organizations and all thoughtful citizens, not only in the Mississippi Valley, but throughout the country, to arouse public interest and voice this important matter to the authorities at Washington, for we believe that the people of the nation at large as well as the inhabitants of those states whose commerce this great river fosters and whose acres it waters and fertilizes, are interested in the preservation and protection of every acre of the magnificent forest reserves, which are situated at and tend to preserve and protect its source.

ST. PAUL COMMERCIAL CLUB,

L. G. HOFFMAN, *Pres.*

C. P. STINE, *Secretary.*

MINNEAPOLIS COMMERCIAL CLUB,

F. R. SALISBURY, *Pres.*

W. G. NYE, *Sec. Public Affairs Com.*



MINNESOTA NATIONAL FOREST RESERVE

BY

Rev. J. T. BRABNER SMITH

Frazee, Minn.

PRESIDENT ROOSEVELT acted wisely in securing the services of a disinterested expert in practical lumbering to visit the Minnesota National Forest Reserve, at Cass Lake, and to report the result of his investigations to him at Washington. This report has been made public, and the friends

ends of a few persons, or even to satisfy the real want of a small minority.

For two years I lived at Cass Lake village, adjacent to this reserve, and was there when the first selection of land for this reserve was made. Most of the land and the lakes included therein the writer has personally seen.



Lake Thirteen in the "Ten Sections"—Minnesota National Forest Reserve.

and lovers of the natural beauties of the forest are encouraged.

The knowledge that the Federal Forest Reserves are to be used for the national good will steadily gain them friends, and the idea is constantly growing that such marvellous beauty as exists in the Minnesota Reserve should not be destroyed for the selfish

Eugene S. Bruce, now Expert Lumberman of the U. S. Forest Service, was in charge of the selection of lands to constitute this reserve, and a more able and conscientious man I have never met. He was for years engaged in lumbering work in the state of New York. He is a competent lumberman, and no better man could have been in

charge. His assistants were men of experience. Gifford Pinchot, Chief Forester of the Department of Agriculture, also personally examined the lands. He is probably the most capable forest expert in America, if not in the world, and a man of rare power of discernment. He had no personal preference where the reserve should be located, but simply acted for the good of the whole nation. Mr. Pinchot, Forester, and Governor Rich-

desiring only to do their full duty in making a wise selection.

Settlement of the land by farmers was considered by some interested people better than a reserve; the cutting and denuding of the vast forests of pine, better than keeping them gradually thinned out by scientific logging; the quick and present financial gain more to be desired than a steady and permanent growth and wealth; but at a meeting of the most prominent busi-



Good reproduction of young pine east of Cass Lake.

ards, Commissioner of the General Land Office, went over these lands together with Mr. Bruce, and were agreed on the present location. Other experts also were in accord, and now comes President Roosevelt's special representative, Mr. J. B. White, who indorses all that has been done and reports it as the very best possible selection.

In conversing with Mr. Pinchot, Mr. Bruce, and Governor Richards, the writer found them all unbiased and

ness men of Cass Lake village, held at the time of this visit, both Mr. Pinchot and Governor Richards explained that eventually Cass Lake would be better financially and every other way because of the reserve.

Expert examination showed that the bulk of the land was sandy and best adapted for forestry. Herman H. Chapman, late superintendent of the experimental farm at Grand Rapids, Minn., said, after a careful examination of the lands selected: "The Mor-

ris Bill has set aside 225,000 acres of land for a forest reserve. The question raised as to the advisability of such action hinges largely on a single point—is the land agricultural or not?

* * * Almost the entire area chosen, which lies east and south of Cass Lake, is solid Norway and Jack pine land * * * Farmers on Jack pine sands, except a few truck gardeners, are of no benefit to a community in the end. Land which is not fit for farming can still grow trees."

from sale and settlement. Of this selection Mr. Bruce, shortly after it was made, said, in an address before the American Forestry Association, at Minneapolis: "Regarding the location of this reserve, there are many reasons why that portion of the Chippewa Indian Reservation, situated in the northerly and westerly part, which includes within its boundaries some of the principal lakes and a long stretch of the Mississippi River, is most desirable as a location for the Minnesota



Good reproduction of young pine east of Cass Lake.

On the 10th of June, 1903, the first selection of land was approved by the Department of the Interior. This included 104,459 acres, of which 89,707 acres were classed as pine land, and 14,753 acres were classed as agricultural land; this constituted the first selection of the 225,000 acres of land to be selected by the Forester under the terms of the Morris Bill, and there were also selected 6,399 acres to be included in the ten sections reserved

National Forest Reserve. One very important one is that this particular locality contains the largest compact acreage of classified pine land of any section within the reservation * * * This fact necessarily had a strong bearing on the selection, since one of the provisions of the Morris Act is that the selection shall be made from lands *classified* as pine lands * * * There is less true agricultural land in the territory selected than in any other

area of equal size which could have other suitable locality which could been selected. Most of the land in have been selected." this selection, classified as agricultural, The agricultural, or so-called agricultural land, is far less in area than subject to overflow by the government the pine land, and the pine land is reservoirs * * * Much of this so-called chiefly sandy. Here and there are agricultural land will eventually be de-some rare spots of black loam soil, but ducted when the delineation of the the best land has almost invariably lands which will be overflowed by the been taken as allotments for the In-government reservoirs, located on the dians, who have secured land near the outlets of Leech Lake and Lake Win-lakes, stream, and rivers. The Chippe-nibigoshish, is completed * * * Thewa Indian has not been badly used, territory selected includes within its as the allotments will show, for he has



Good reproduction of Norway Pine.

area some of the finest lake and river scenery in these Indian Reservations, and, indeed, some of the finest in the Northwest. It is very accessible from points which can be reached by railroad. Steamboats and launches can be run through the various lakes and rivers in several directions, to the boundaries of the reserve. Another very strong reason why this location is desirable is that the present reproduction of young pine in the locality selected is greater in proportion than in any

a real paradise to dwell in, with as much freedom as his heart desires. The picturesque Indians add much to the natural beauty of the reserve. They are of a wandering disposition and are not settling down to farming yet; the full-blooded Indian still prefers to live as of yore, by fishing and hunting, and in bands.

The whole reserve area is practically surrounded by lakes, streams, and rivers. Lake Thirteen is one of the most lovely lakes in existence. It contains

pure and sparkling water, fed by natural springs. Like most of the lakes in the reserve, it has sandy beaches, excellent for bathing purposes. The Indians travel by canoe and portages from Cass Lake to Lake Thirteen, through a chain of lakes. The lakes are all well stocked with pike, bass, perch, and some with muscalonge.

From Cass Lake one can take a steam launch, canoe, or boat, and travel for days through the different lakes and streams, amid the choicest

scending to the water's edge. From its crest the visitor can see the shining waters of several lakes and streams, and the distant course of the great "Father of Waters." On this island is the Indians' sacred lake, Windigo, which is a veritable lake within a lake, without inlet or outlet, surrounded by masses of veteran White and Norway pine. Pike Bay, whose shores the ten sections entirely protect, is a lake of extraordinary beauty and location, with a navigable outlet to Cass Lake.



Looking Across Moss Lake in the "Ten Sections."

and most exquisite scenery. The sun and moon, shining through the majestic White and Norway pine on the shores, make a most enchanting and vivid panorama.

An additional proof of its choice location is that the islands in Cass Lake were reserved from sale or settlement. Among those in Cass Lake is the famed Cooper or (Star) Island. It cannot be excelled for charm, standing majestically above the surrounding waters, with its numerous points de-

It has a fine sandy beach and bottom and is seldom troubled with storms, being guarded by pine covered hills.

Along the south and west shores of Pike Bay are some very heavy stands of Norway of an excellent quality. Here and there are small quantities of dead and down timber. It is strange that fire has done so little to destroy this valuable stand of pine, but this is probably the result of the care exercised by the Chippewas to protect their favorite hunting grounds.

Wild flowers in the summer months are plentiful, and the odors from the pines fill the air with health-giving breezes. The wonderful tints of the trees and the colors of the flowers appeal to eye and inner sense and give added joy to the lover of nature. The lakes and woods are the dwelling places of numerous wild birds, ducks, partridges, and other species. Game is abundant. Deer, moose, and bear are plentiful. The reserve is certainly

a great and manifold blessing to mankind, and will be eagerly sought by tourists, naturalists, sportsmen, and lovers of God's out-of-doors.

Let not man, by his greed, spoil that which God made so beautiful, so pure, and so lovely. The future will show the great wisdom of the choice of this reserve and, should it be maintained, people in years to come will rise up and call the Minnesota National Forest Reserve blessed.

FORESTED WATERSHEDS

A New Phase of New England Thrift

BY

ALFRED AKERMAN

State Forester of Massachusetts.

WITHIN a few years several New England communities have become aware that they have been allowing one of their resources to go undeveloped. Among these are Hartford, Middletown, New Haven, and Ansonia, Connecticut, and the Metropolitan District in Massachusetts.

HARTFORD.

About fifty years ago Hartford began to acquire land contiguous to its water reservoir. This land was acquired to protect the water supply from pollution. From time to time, as the needs of the city grew, other ponds with surrounding lands were purchased. In 1902 the total area of watershed owned by the city amounted to 2,500 acres, of which some 1,300 acres were not covered by water. With the exception of a few cords of firewood, this land produced nothing. It was not in a condition to be of service as a park. And it must be held to protect the city's water supply. The question, then, which came before the Water Board was, Is it possible, consistent with its protection functions, to develop the tract as a public park and also

to make it produce revenue?

A forest engineer was engaged to examine and report on the tract. His report, or working plan, showed how the tract, if treated in a scientific and systematic way, might in time be made to produce considerable revenue and how at the same time it might be turned into a beautiful, though unpretentious park.

The working plan showed that 1,300 acres were available for forest growing. Of this area 800 acres were already covered with a sprout growth of chestnut, oak, hickory, maple, and other broadleaf trees. The rest consisted of abandoned fields and pastures which were coming up to inferior growths, such as red juniper and poplar leaf birch.

Improvement thinning was advised for most of the forest stands, and planting to timber producing kinds of tree for the old fields and pastures. The thinning was advised for two principal reasons. In many places the stand was so dense that its growth was being retarded. In others, many trees had been damaged by an ice storm which swept over this section of the

country in 1897. From these damaged areas all but the best trees were to be removed, in order to make room for a better growth. From the other portions of the forest only such trees were to be removed as would increase the

been thinned and 73 acres planted. The thinning has yielded a product of 1,263 cords of firewood and 1,338 fence posts. Of this product 369 cords were sold at a net profit, varying from twenty-five cents to a dollar and thirty



A Quiet Woodland Road, Hartford Watershed.

growth and improve the timber quality of those remaining.

The working plan was put into operation at once. In the three years that have elapsed since then, 156 acres have

cents on the cord. The rest of the material has been used for construction and heating purposes; and, although not offered for sale, the same profit has been made on it, for it would have

been necessary to purchase other supplies, if this had not been at hand. As the work was undertaken to improve the growth and increase the future crop, the improvement would have been clear gain, had the product only paid for its removal. The profit that has been realized may be regarded as an extra profit that may be applied to planting the open lands.

The planting has been chiefly to white pine in mixture with broadleaf trees, such as chestnut, sugar maple, white and red oak, and hickory. All

which has come with experience, and in part to the production of more and more of the stock in the nursery on the tract.

This nursery was established in 1903. It occupies only a third of an acre. It now has a stocking of 125,000 plants, chiefly white pine, white ash, and sugar maple.

It has been found expedient to sow such species as chestnut, oak and hickory directly in the place where they are to grow, rather than to start them in the nursery.



An Improvement Thinning on New Haven Water Company's Land.

but the choicest of the broadleaf trees will come out in the process of thinning, leaving a stand of white pine with a small admixture of hard woods. The mixed planting has been found cheaper than pure planting to pine; and the broadleaf trees are a benefit to the pines; and, moreover, their presence make a choice of species for the final stand possible, should anything happen to the pines. As the work has progressed the cost of planting has been reduced from \$8.00 per acre to \$6.33. This is due in part to the increased efficiency of the workmen

The plantations have been very successful, in all cases insuring a dense stand in the future. Several averages in the 1903 plantings of white pine show that 93.4 per cent. are living.

The young trees planted or sowed in the old fields and pastures have begun to show a little above the weeds and grass; and their growth will be rapid now that they have made a start. For instance, the white pines planted in 1903 and which are now five years from the seed, having been planted as two-year-olds, now average 14.6 inches in height, almost exactly half

of which or 7 inches was made this summer past. For the next twenty years they will average about 18 inches a year.

PARK FEATURES.

The Hartford tract contains nothing grand in the way of scenery. But a turn in the road sometimes brings one upon a scene of exquisite beauty. One of the accompanying illustrations is reproduced from a photograph of one of the reservoirs. On the afternoon of an Indian summer's day in late October, the quiet surface of this tiny lake reflects in charming manner the gorgeous autumnal foliage of the

Maltby Park, the principal watershed of the New Haven Water Company, has been leased to the Yale Forest School for a term of years. It is used as a demonstration forest for the forestry students. Under the direction of their instructors they have mapped the different kinds of growth, estimated the standing wood, and prescribed treatment for the areas that needed treatment. They have not only drawn up the working plan; but they have marked the trees which should be removed, and they have planted a considerable area of the open lands. It



Seedlings of Sugar Maple, White Ash, and White Pine in the Nursery on the Hartford Watershed.

hardwoods and the deep green of the hemlocks on the wooded slope above it.

The people of Hartford are finding out the attractions of the place; and on fair days in spring and fall they come out to drive along the quiet woodland roads, or to ramble over the hills.

NEW HAVEN, ANSONIA, AND MIDDLETOWN.

The writer has dwelt at some length on the Hartford project, because it is typical. The conditions and problems are very much the same in New Haven, Ansonia, and Middletown.

is the policy of the Forest School to make the instruction as practical as possible; and during term-time the students may often be seen at work with axe or mattock. It is a hopeful sign of the times—one that augurs well for the future of our wasted forests—when these bachelors that are, masters that would be, are willing to do manual labor in fair weather and foul in order to train themselves for the battle that is now waged for forest perpetuation in this country.

The working plan for the Ansonia watershed was also prepared by the Yale forestry students.

Middletown is developing its watershed under the direction of the Connecticut State Forester.

THE WACHUSETT RESERVOIR.

The Metropolitan Water and Sewerage Board began to practice forestry on the watershed about the Wachusett reservoir in 1898. There are about 3,000 acres available for forestry pur-

poses. There are some small patches of growth, but the greater part of the tract is made up of old fields. These fields are being planted at the rate of about 200 acres a year.

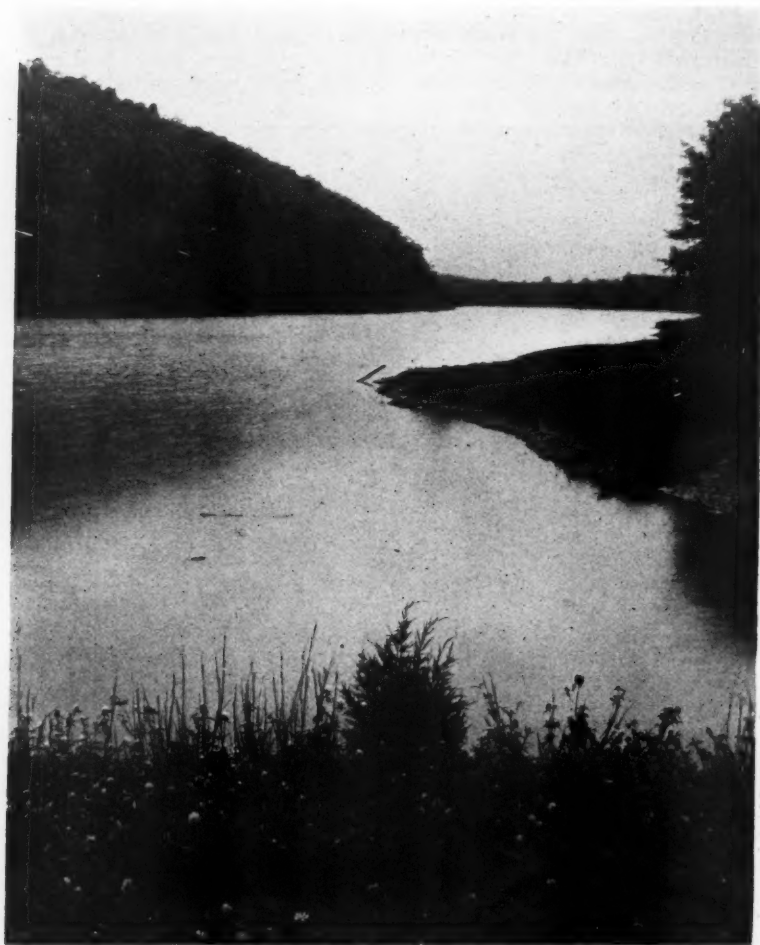
It will be a quarter of a century or more before the Commonwealth begins to realize in a commercial way on this planting. But it will get its money back with interest; and the



Hardwood Stand, Needing Moderate Thinning, on the Hartford Watershed.

forest on the watershed will be preventing pollution and purifying the water in the meantime. The tract will also serve as a park for the residents of Clinton and neighboring towns.

to consider the reduction of unnecessary expenses, it is also true that the great loss occasioned in a negative way by neglecting to make the most of a resource is in reality just as much an



One of the Reservoirs, Hartford.

A GOOD EXAMPLE.

The cities that have been mentioned are setting a good example of public economy. Some people suppose that economy consists entirely in cutting down expenses. While it is true that most cities and towns would do well

unnecessary expense as though money had been wasted. The New England people are beginning to see this; and in the near future we may find many cities and towns improving their watersheds by the application of the principles of forestry.

REORGANIZATION OF THE PHILIPPINE BUREAU OF FORESTRY

BY

W. J. HUTCHINSON

Forester, Zamboanga, Mindanao, P. I.

THE "Reorganization Act," which provides for the consolidation of the various government bureaus and a reduction of a million dollars in the cost of running the same, was passed by the Philippine Commission, and approved by the governor general of the islands, October 26, 1905.

Under the provisions of this act the Bureau of Forestry will not lose its identity, although several important changes, which take effect December 1, 1905, have been made in its organization. A brief outline of the most important of these changes follows:

1. The chief of the Bureau of Forestry will hereafter be known as the director of forestry.

2. The position of assistant chief is abolished.

3. The Division of Forest Inspection, which has charge of the work of the various forest stations, and whose officials classify, appraise, and order payment on all forest products taken from public lands, is abolished, and its work transferred to the Bureau of Internal Revenue.

As a result of this transfer, the foresters of the different districts will be able to devote their entire time to the silvicultural study of the forests, the location of areas best suited for commercial exploitation of timber and minor forest products, and the inspection of logging operations of various licensees.

The islands are at present divided into ten forest districts with fifty-six forest stations. As all manifests and orders of payment will now be issued by officers of the Bureau of Internal Revenue, it will only be necessary to retain the most important stations as headquarters for the foresters, and a number of the best rangers to assist

in the work of inspection, etc.

4. The Division of Disbursements is abolished, and hereafter all accounts, etc., will be rendered to the Division of Disbursements, Bureau of the Treasury.

5. The experiment station located on the Lamao Forest Reserve is to be transferred to the Department of Agriculture, but the bureau will still continue work on the various type-areas in which botanical and silvical studies have been carried on since the establishment of the reserve in 1903.

6. Postal, telephone, and telegraph service on government business will be paid for at the regular rate established for similar services to private persons, out of a fund appropriated for the purpose.

Another item of interest apart from the "Reorganization Act," is the general order issued by the Bureau of Forestry, and approved by the Secretary of the Interior, October 2, which will do much toward alleviating the hard times at present prevailing among the inhabitants of the islands.

This order provides that for a period of five years the residents of the islands will be allowed to utilize free of charge, and without license, forest products, earth and stone, for personal use, cutting of trees of the first group excepted.

Timber cut for sale or export will continue to pay the regular government tax, but the new ruling will do away with the "red tape" heretofore necessary in order to obtain permission to cut a few cubic feet of wood for personal use.

At the present time there are eight American-trained foresters and assistant foresters in the islands, and a number of new men are expected to arrive from the United States early in 1906.

LETTERS URGING THE ESTABLISHMENT OF THE WHITE MOUNTAIN FOREST RESERVE.

UNITED STATES SENATE.

Washington, D. C.

January 13, 1906.

H. M. SUTER, ESQ.,

Secretary American Forestry Association, Washington, D. C.

My dear Sir:—

It is a matter of much regret to me that I find myself unable to respond to your kind invitation to attend the meeting of the American Forestry Association on the 17th inst., and to make a brief address in behalf of the proposed White Mountain Forest Reserve. The press of public duties is such that I find myself just now unable to give much attention to matters outside of my legislative work. The reasons for an appropriation of public funds designed to save the forests of the White Mountain region from devastation are so clearly and forcibly set forth in a report from the Senate Committee on Forest Reservations and the Preservation of Game made during the Fifty-eighth Congress that it is impossible to add anything to the presentation there made. The White Mountains of New Hampshire are in the broad sense the property of the people of the entire country, and I am gratified to know that the destruction of those forests is being protested against by leading citizens of many of the states of the Union. While New Hampshire will sustain a loss if the forests of the White Mountain region are destroyed, it is equally true that a positive loss will accrue to the American people as a whole. The objection that has been made in certain quarters that it is a new departure to appropriate public money for the purchase of land for a forest reserve, while technically true, loses its force in view of the fact that millions of acres of the public domain

have been set aside for forest reserves, thus indirectly taking from the Treasury the proceeds from the sale of such lands. In one case the money was halted before it reached the Treasury, and in the other it is proposed to take it from the Treasury after it has been paid in, which, after all, is but a difference in methods. I hope that the requisite appropriations may be made in the near future for the acquisition of lands necessary to establish both the White Mountain and Appalachian forest reserves, as is proposed by bills now before Congress.

Very respectfully yours,

J. H. GALLINGER,

U. S. S.

From Hon. T. Jefferson Coolidge.

BOSTON, MASS.

HON. F. W. ROLLINS.

Dear Sir:—I have read with great interest the bill of Senator Gallinger, of New Hampshire, proposing that Congress should make a forest reservation of one half a million or more of acres in the region of the White Mountains.

It is unnecessary for me to say to you that for some years the manufacturing establishments on the Merrimac River in New Hampshire have suffered seriously from the cutting down of the forests. One freshet, a few years ago, cost the Amoskeag Company more than one hundred thousand dollars.

Besides the injury done by the excessive flow of water in freshets, we suffer also in the same way from absence of water during dry seasons, as the woods no longer retain the water. It is emptied at once, and not held back to trickle slowly into the streams.

But New Hampshire is not the only state to which this reservation would

be of inestimable value. The Connecticut, the Merrimac, and the Saco, all have their sources in the White Mountains; so that Vermont, Connecticut, and Massachusetts are equally interested in the scheme, and even the Androscoggin derives part of its stream from the country north of the White Mountains. Maine, therefore, will also be benefitted.

All the states in Europe have realized that it is absolutely necessary to preserve the forests, in order to prevent freshets at one season and droughts at another, and I think almost all of the governments have adopted forestry laws which forbid the cutting of wood unless with permission of the government.

I trust, therefore, that the senators and representatives will unite in the heartiest approval of Senator Gallinger's proposition.

T. JEFFERSON COOLIDGE.

From Hon. Richard Olney.

HON. FRANK W. ROLLINS.

My dear Governor:—I trust Senate bill, Fifty-eighth Congress, No. 2327, introduced by Senator Gallinger, of New Hampshire, may become a law.

That it is in the public interest and seeks to promote objects of great public importance cannot be doubted.

The only question is whether these public objects may be properly considered as national in character—as being purposes for which the national revenues may be legitimately appropriated. On this point it is to be remembered that the mountain regions of New Hampshire are the sources of three important rivers—the Connecticut, the Merrimac, and the Saco—and that the Androscoggin traverses a part of the state and is indebted to it for two important branches; that these rivers flow into other states and furnish water and power to municipalities and large manufacturing industries, whose welfare and prosperity are greatly dependent upon the regularity and evenness of the supply; that the increase of the timber supply of the

country is as important as the increase of any other product of the soil; and that in addition to the large commercial and industrial interests involved, thousands of people from all parts of the land annually visit the hill country of New Hampshire for rest and recreation. In view of these considerations, it cannot be fairly claimed that the subject matter of Senator Gallinger's bill is of interest to, and should be dealt with by New Hampshire alone.

RICHARD OLNEY.

From Morris K. Jessup, Esq.

NEW YORK CITY.

HON. F. W. ROLLINS.

Dear Sir:—I am in receipt of yours of the twenty-second relative to a national forest reserve in the White Mountains. I am in hearty accord with this movement, and have always advocated the cause of the preservation of our forests, which are so essential to our water supply for the large cities, as well as the manufacturing industries. * * * * *

You have my earnest wishes for the success of your undertaking, and I trust Congress will see fit to carry out the proposed bill which has been introduced in the Senate.

MORRIS K. JESSUP.

From Rcv. Edward Everett Hale, D.D.

WASHINGTON, D. C.

My dear Governor Rollins:—I was appointed at Intervale, New Hampshire, chairman of the committee which should express the sentiments of powers outside New Hampshire regarding the preservation of the New Hampshire forests. And I also write with a good deal of personal feeling. For I was on the Geological Survey in those regions in 1841, and have with these eyes seen forests demolished in which were trees centuries old, and where the region is given over to sumach and blackberry bushes. It is no mere matter of botanical curiosity which we are pleading for. It is the preservation of a water supply which

affects five out of the six New England states. It also affects the very existence of whatever makes the region attractive to persons from every part of the nation. It is easy to see on mere economical grounds that the destruction of forests has been the ruin of many a nation which did not have wisdom enough to keep them. In our case the gradual denudation of our noblest mountains will destroy the noblest and best ground for Re-Creation which is now open to all people east of the Mississippi.

We hope with all our hearts that the great Appalachian reserve will be purchased for the nation. Four thousand square miles is none too large a reservation. Certainly with so satisfactory a standard as that, ten or twelve miles square, say a hundred and sixty square miles, is none too large for another breathing ground for forty million people.

EDWARD E. HALE.

RESOLUTIONS IN FAVOR OF THE RESERVATION.

Resolutions by various commercial and other organizations have disclosed an interest extending beyond the boundaries of New England. A few typical resolutions are here given:

By the American Paper and Pulp Association.

NEW YORK CITY.

Resolved, That the American Paper and Pulp Association approve of Senate Bill No. 2327, for the purchase by the government of a national forest reserve in the White Mountains, to be known as the National White Mountain Reserve, it being a step in the direction of scientific forestry and proper protection of our water supply.

By the Boston Associated Board of Trade.

BOSTON, MASS.

Whereas, the continued unscientific destruction of our forests in New Eng-

land is affecting our rivers and indirectly our manufacturing resources, also denuding and permanently destroying the productiveness of large areas of land,

Resolved, That the Associated Board of Trade heartily endorse Senate Bill 2327, for the purchase by the government of a national forest reserve in the White Mountains, to be known as the National White Mountain Reserve, and that our senators and representatives in Congress be requested to assist in the passage of the bill.

By the New Haven and Coastwise Lumber Dealers' Association.

NEW HAVEN, CONN.

Whereas, the New Haven Lumber Dealers' Association views with much concern the rapid cutting down of the forests of the great White Mountain region, a situation which threatens within a comparatively short time to sweep the central portion of these mountains entirely clean of the splendid trees which "formerly made it one of the few great forests standing east of the Alleghanies;" and

Whereas, we learn a bill has been introduced in the United States Senate which has for its object the saving of the remainder of these forests by an appropriation which shall create a national forest reserve in the White Mountains,

Resolved, That as an association of lumbermen conversant with the needs and the urgency of the situation, we thoroughly endorse the purpose of this bill and hope that this present session of Congress will take speedy and favorable action in the matter.

Resolved, That copies of these resolutions be sent to our senators, the Hon. Joseph R. Hawley and the Hon. Orville H. Platte, and to our representative, the Hon. Nehemiah D. Sperry, urging them to give their hearty and earnest support to this bill.

By the National Wholesale Lumber Dealers' Association.

WASHINGTON, D. C.

The report of the committee on forestry, which was adopted, contained the following:

"There is at present legislation projected, and in some cases far advanced, asking for state and federal aid in the establishment of forest reserves, which should receive the aid and support of the members of this association. Among these are the projected Appalachian reserve and the National White Mountain forest reserve; for the latter Senate Bill No. 2327 is now pending in Congress, and your committee asks that this association shall say that

"It is the sense of this annual meeting that the members shall in every

way possible lend their support, aid and influence to the passage of this bill and all legislation of like kind."

Resolutions have been passed also by the following associations: Boston Lumber Trade Club, Boston Merchants' Association, Connecticut State Lumber Dealers' Association, Rhode Island State Lumber Dealers' Association, New Hampshire State Lumbermen's Association, Appalachian Mountain Club, and National Forestry Association.

The society has asked men and women of New Hampshire birth and ancestry who are living in other states to write to their respective congressmen requesting favorable action.

The outlook for the bill in Congress is favorable.

SUGGESTIONS FOR STATE FOREST FIRE LAWS

BY

E. J. CHEYNEY

Minnesota Experiment Station.

THE forest laws of most of our states are far more impressive in the reading than they are effective in the application. There are at least three glaring weaknesses—almost universal in their occurrence—the correction of which would make all the other shortcomings of the laws seem trivial indeed.

In the first place, the legislatures—led by what is probably a false idea of economy—would all seem to have the bee by the wrong end. The laws are nearly all directed toward the fighting of fires which have already started in the woods, providing dire punishments to be visited on the heads of those who are supposed to have set such fires, and giving promise of horrible things which will be done to any district attorneys who do not properly

prosecute such offenders. To this end a grudging and usually inefficient appropriation is made for fighting fires. Many of the laws simply appoint fire wardens, without pay, empowering (?) them to fight fires and hire help for that purpose, without making any appropriation whatsoever.

These laws are a good thing. Not only does it show that people are waking up to the necessity of such things, but they are of practical value in providing men where they are very badly needed. It would, however, be much better to look to the prevention of fires so that there would be no necessity of fighting them. The old adage that an ounce of prevention is worth a pound of cure applies nowhere better than to forest fires. And would it not be possible to bring this about with

little or no increased expense to the state?

Under the present system a fire warden is paid only for the time spent in actually fighting the fire. He cannot afford to neglect his own work to look for fires in the places where they are most likely to occur, nor even to waste an afternoon in hurrying to inspect a rumor which may turn out to be a false alarm, and consequently no pay. In this way a fire almost necessarily grows to dangerous proportions before anyone can afford to take any notice of it, and a large number of men are then required to fight it.

Every forest fire has a small beginning and a very large per cent of these beginnings would be found by a man who was paid to look for them; and would be found in such time that he could put them out alone with the aid of one or two helpers. Without looking into the value of the property which would be saved in this way, it is an open question whether a paid regular patrol would not nip in the bud a sufficient number of fires to make that plan actually cheaper than paying the crowds of temporary laborers who have to be called in at extra high wages to fight the fires after they have gotten well under way. For example: It would not require a very large fire to force a warden to hire thirty men for two days at \$2 per day. One hundred and twenty dollars is spent in putting out this one little fire which has nevertheless done considerable damage before it was gotten under control. That \$120 would pay one man to patrol a large territory for three months of the summer danger season—April, May, and June. Such a patrol would probably have caught this fire—together with dozens of others—in the incipient stage, saved several thousands of feet of lumber, and the expense of several hundred fire fighters.

That millions of feet of timber would be saved in this way is beyond question, but would it not also be cheaper in the actual cash outlay?

APPOINTMENT OF WARDENS.

Another mistake, though not nearly so important as the first, is the appointment of elected men, such as the Selectmen of a town, to the position of fire warden. A man will not leave his own work to go fight a fire on some one else's ground and probably for some one else's benefit, unless he has to, and forcing men to do such things is not a business calculated to make a man popular. Consequently the elected fire warden is not going to do it, or can he be greatly blamed for refusing. He does not care about losing the position as fire warden, but the more paying or more honorary position by virtue of which he is fire warden. One or two of the states have realized this and found a very good solution of it in the appointment of the wardens by the courts.

THE MATTER OF PAY.

This difficulty which the fire warden has in obtaining aid in time of fire—a question which seems to puzzle some people unduly—is the result of another great weakness in the fire laws. They usually offer higher pay than is given for other work, but men do not volunteer for their work. The causes are not far to seek. The job is a peremptory and temporary one—which does not matter so much, though both these characteristics go against the grain of the average American—and the pay comes somewhere in the far future—which matters a great deal. To the class of men hired on such occasions pay in the future is no pay at all; they would rather work for fifty cents and get it at once, than for two dollars to come a month hence. And lucky is the man who gets his money through the government red tape in a month! The Pocono Protective Fire Association, in Pennsylvania, though they do not pay as high wages as the state, have no trouble in getting men for this work because they pay cash. This has been pretty generally acknowledged as a

great fault, but nothing has been done to remedy it.

I would like to suggest the following plan: The length of time taken to get the money from the state treasuries is largely the result of the cumbersome working of those institutions and therefore unavoidable. But why not have a sub-pay station in the shape of the small country stores? Arrangements could easily be made with such stores, without expense, to credit the order of the fire wardens. These orders could be made out on the grounds immediately after the work was completed, taken to the neighboring store, and there either be exchanged for cash or credited on the books. The stores

would be willing enough to do this for the increased trade which it would inevitably bring them, and could wait for the slower pay of the government. Probably many orders are now cashed at the stores at a tremendous discount; an agreement between the store and the state would secure full pay for the holder. To make this system secure against leakage the wardens should be paid and bonded men, but the small amounts of money involved and the caution of the stores would act as a pretty good check on any fraud.

This would seem to be the most effective way of bracing up a weak system which is the next best thing to getting a new one.

ANNUAL REPORT, GOVERNMENT EMPLOYEES MUTUAL RELIEF ASSOCIATION

THE Government Employees' Mutual Relief Association is intended to include male employees of the Geological Survey, the Reclamation Service, the Forest Service and other like government offices. It is organized to meet the unexpected expenses of its members resulting from accident, illness, or death. It is also intended to relieve their associates in services from the burden of caring for them, which in the past has sometimes been excessive.

The government does not assist civil employees who die, become sick, or injured, whether in the course of duty or otherwise.

This organization is intended to meet the conditions arising from this fact in a way that shall enable each employee to care for himself and not, as in some cases in the past, be dependent upon the voluntary assistance of his associates.

The policy issued provides:

1. Indemnity for loss of time on account of accident or illness to the extent of \$150 in any 12 months.

2. Repayment of doctors' bills, hospital expenses, and medicines to the extent of \$100 in any 12 months.

3. In case of death, actual expense of preparation of body and its transportation home, also \$100 additional for funeral expenses; total not to exceed \$600; or in case of death at home, a cash payment of \$200 for funeral expenses.

The dues are \$12 per year, payable semi-annually or in some cases monthly. A membership fee of \$1 is payable upon joining the Association, and goes into a reserve fund, available for benefits only.

In the few months of its existence, the Association has relieved several cases that would have left the member or his family in a distressing condition, besides requiring others in his party to aid in caring for him during several weeks.

One member, who had been insured only four days, was thrown by a horse thus sustaining a serious double fracture of the leg. He received the maximum payment, \$100, for medical

attendance and also \$53.57 indemnity for loss of pay, which was particularly opportune as he was for several weeks without pay.

An employee of the Forest Service postponed joining the Association until his return from a field trip during which he was drowned. His unexpected death, with the attendant expenses which were met with great difficulty, imposed a heavy burden upon his family. This would have been avoided if he had carried out his intention of joining this Association.

A number of other cases have arisen since the organization, in which the distress to an eligible employee, who had not joined, or to his family, due to the expense of death, illness or accident, has been seriously aggravated by the need of funds for meeting such an emergency.

In many such instances associates have been compelled to help out with these expenses from their private resources and such demands have at times been very heavy.

It is the aim of the Association to give every eligible employee an opportunity to protect himself, his relatives, and his associates from such calls and to relieve his associates from moral responsibility to aid, which cannot be so binding when the injured man has failed to take advantage of the opportunities offered.

One feature to be emphasized is that the relief is immediate. Payments are made as soon as notice of death is received, and there is no delay in meeting the request for indemnity in cases of sickness or accident when supported by ordinary receipts and a simple certificate from the chief of party or other superior officer.

There is no red tape. A member died during the night of December 28. The Secretary was informed at nine o'clock in the morning of the 29, and before noon of that day the death benefit of \$200 was in the hands of the widow.

Every member can aid to make the Association stronger, can protect him-

self and family from money loss due to death, sickness or accident, and protect himself against personal calls for assistance by continuing his membership and by interesting his associates to apply for membership, which will be effective from date of application, if certified by chief of party or other superior officer.

The Association's experience to date proves what was expected at the time of its formation, that, through saving of exorbitant salaries and advertising, and by paying no rent or agent's commissions, it furnishes a fourfold greater protection for the rate of membership dues than any known public accident and health company. The credit dividend on January 1, 1906, was 35 per cent of the amount paid in for membership dues. This will be available as a credit on dues for the latter half of the year 1906.

The Governing Committee announces that on January 6, after the audit of the books of the Secretary and Treasurer, the financial condition of the Association is as follows:

FINANCIAL STATEMENT.

Receipts:

From dues, 1905.	\$937.00	
From dues, 1906.	6.00	
		\$943.00
From fees.....	177.00	
		\$1,120.00

Disbursements:

Stationery and printing..	\$76.10	
Postage	21.20	
General expenses.....	20.00	
Salaries	131.23	
Medical indemnity.....	134.50	
Sick indemnity.....	53.57	
Death benefit.....	200.00	
		636.60
Balance in hands of treasurer..		\$483.40

CREDIT DIVIDEND.

Deducting from the balance in the hands of the Treasurer the amount of the reserve fund, \$177, and the amount of dues paid for 1906, \$6, there is left available for the credit dividend provided by Article X of the Constitution, \$300.40.

Of the 177 members who have joined the Association, 28 are sus-

pended for non-payment of dues (monthly members), one member has died, and 3 members have received indemnity, leaving 145 members entitled to share in the credit dividend.

These 145 members have paid \$832 in dues, making the distribution of the \$300.40 on the basis of 35 cents for each dollar of dues paid. This credit dividend, in the case of those whose membership began June 1, 1905, will be \$2.45, as they paid \$7 dues. Those whose membership began July 1, paid \$6 dues, and will be entitled to \$2.10, and so on.

This credit dividend will be available in payment of dues at the end of

1906 by those who remain in good standing.

Those whose credit is \$2.45 will pay \$3.55 on July 1, 1906, to be paid up to the end of the year, or if they pay monthly will be called upon to pay only 55 cents for October and will then be paid up to the end of the year.

This dividend is a little less than the approximate amount announced in the notice of the annual meeting on account of the death of Herbert B. Blair during the last week of the year. The death benefit of \$200, paid to his wife, reduced to that extent the amount available for the dividend.

AIDING CITIES AND TOWNS TO NAME THEIR TREES

The Forest Service will Identify Trees in Streets and Parks

THE increased interest in forests and forest trees which is a sign of the times has, among other things, led many city and town officials to seek to make known the names of trees growing in streets and parks. Not only are such trees in very many cases now without marks of identification, but in not a few cases they have been labeled with incorrect names. The Forest Service has devised plans by which its co-operation may be secured in correctly identifying the public trees of any community which may care to call upon it.

It is remarkable how little uniformity there is in the use of tree names. Even scientific names, which are, of course, always more exact than the common names, are in many cases unsettled, but common names are often used almost at random. In different parts of the country the same species may be popularly known under very different names, and, on the other hand, the same name is often used in

different localities for altogether different trees.

In the effort to assist toward uniformity of usage in scientific names of forest trees, and also to lessen the chaos in the use of common names, the Forest Service has already published "A Check List of the Forest Trees of the United States." This serves as a guide when once a tree has been identified by the botanist. But the first requisite is that the identification should be correct. It is here that difficulty is often met with. For this reason the Forest Service now offers its technical knowledge to city authorities.

There are two ways in which assistance may be given. Where the work is on a large scale, a representative of the Service will visit the town or city and identify the tree by examination on the spot. In most cases, however, identification by correspondence will prove entirely adequate. This will require merely that specimens of the

trees be sent to the Forest Service, together with a rough sample plat showing their location, the plat and specimens being numbered to correspond.

For such identification a full set of specimens, illustrating mature foliage, and, if possible, specimens of the flowers and of the fruit (as the botanist call the seeds) should be sent. Fruit specimens are very essential, but flowers may be omitted if they cannot be readily secured. Two or three specimens of branches in leaf, 10 or 12 inches long, taken from different parts of the crown, so as to exhibit all of the leaf forms common to the species, will answer for the foliage. One or two specimens of the foliage, flowers, and fruit may be placed between sheets of ordinary newspaper or blotting paper about 12 by 16 inches in size. Thirty

to fifty specimens and sheets may thus be piled one on top of another, and the whole bundle placed between two stiff pieces of mill board, pasteboard, or thin picture backing, a little larger than the sheets of paper carrying the specimens. The package must then be well tied and wrapped, when it may be sent by mail if under 4 pounds in weight. If, before sending, the specimens are changed to dry sheets of paper once in twenty-four hours, keeping them constantly under a weight of from 40 to 50 pounds, they can be thoroughly dried within two or three weeks, when they will not be so heavy and will still be in excellent condition for identification.

Suggestions as to labels and their use are also made by the Service when requested.

HUGE CONSUMPTION OF WOODEN FENCE POSTS

In the Middle West, Where Trees are Scarce, It Will Pay to Grow a Supply.

THE difficulty of obtaining fence posts at reasonable prices has given an impetus scarcely realized to forest planting in the Middle West. Newspapers, farmers' institutes, women's clubs, and boards of trade throughout the region are pointing out the need of such material and dwelling on the profit realized by the few men who planted trees years ago and whose plantations have been successful. The local supply of all forest products is insignificant, and timber, if not grown at home, must be imported. With the continuous retreat of the sources of supply under the attack of the vigorous demand, the length of the haul increases and the cost of transportation rises higher and higher. Yet the fields and pastures must be fenced. The posts must be had.

The annual production of fence posts in the regular logging camps of

the country, as reported by the last Census, is 8,715,661. How many times greater than this is the annual cut from the home woodlot no figures exist to show; but by taking the total number of farms and their acreage and making a conservative allowance for posts for the fences inclosing each farm, it has been estimated that upwards of 1,000,000,000 posts are set each year. Such figures are too vast to mean anything. Even the nine million posts of the Census, a mere drop in the bucket as compared with the unreported production, would, if set 15 feet apart, girdle the earth, or would build a solid pile 55 feet wide, 40 feet high, and a mile long.

Durability and at least moderate strength are the desirable qualities for fence posts. The use of species which are not durable is expensive, both on account of the more frequent renewal

which is necessary and because repairing is constantly called for. Timber of the required quality is produced in the Middle West by hardy catalpa, black locust, and Osage orange.

Catalpa makes an excellent growth on deep, porous, fertile soil, but only on such soil. Five or six inch posts should be ready to cut in about ten years. In regions immune from the locust borer black locust will yield satisfactory returns from soil in which catalpa would fail, and for this reason it is adapted to a wide area where the rainfall is light. Under ordinary conditions, locust should produce fence material in fifteen years.

Osage orange also is not exacting in its soil requirements. It is being extensively planted for hedges and wind-breaks, from which a considerable yield of fence posts may be obtained. It makes satisfactory growth on dry

soils and reaches post size in from fifteen to twenty years.

Several other species, such as white willow, European larch, Russian mulberry, and red cedar, are also being grown with good results, but none of them is better fitted to supply fence posts than those first named.

The Forest Service fully recognizes the importance of fence posts in farm economy and the great demand for suitable timber. Studies of the growth and durability of various species have been made, and the limits of the commercial planting range of each has been more closely defined. Rapid-growing species which are not durable have been studied to determine some form of preservation treatment which will increase their durability. Further work along this line will undoubtedly add largely to the list of species which can furnish the desired product.

A NEW SAVING IN THE TURPENTINE INDUSTRY

Further Economy Effected in Experiments Made by the Forest Service, which Introduced the Cup and Gutter System.

THE recent experiments of the Forest Service, designed to conserve the life of turpentine trees, gives promise of remarkable success. It is believed that the improvements tested in these experiments will, in addition to prolonging the life of the trees, greatly increase their total yield of turpentine.

When the cup and gutter system of turpentine was introduced by the Forest Service some three years ago, the economy which it secured led to its adoption on a large scale by southern turpentine producers. What lends this system its great value is the fact that it does away with the old practice of "boxing," which consists in cutting a deep cavity or "box" at the base of the tree for the purpose of catching and

holding the resin which flows from the chipped "face" of the tree trunk above. In place of the "box" an earthenware cup, of the same capacity, is fastened to the tree. To this the flowing resin is directed by means of metal gutters. The disuse of the "box" effected a twofold gain—first, a saving of the deep, fatal wound in the base of the tree, and consequently a conservation of its vitality; and second, much less waste in the gathering of the product, with a greater yield of turpentine and better grades of resin.

While this decided improvement spared the tree very considerably, the method of chipping "faces" to stimulate resin flow remained unchanged. This in itself necessitates a deep wound, which, it is believed, exhausts

the vitality of the tree more than is necessary. Exhaustion is evident from the fact that after the first year the yield quickly falls off, and the total productive period is also limited. A further step in advance, to supplement the gains already secured by the cup and gutter system, was therefore sought in the new plan. This aimed to reduce the size and number of "faces" chipped, and also the depth of the chipping, without diminishing the flow of resin.

In the experiments carried out during the past season the first object was to show that at least an equal flow of resin can be secured from shallower and shorter "faces." The success of these experiments has tentatively established the practicability of this plan. A great saving naturally results, for by reducing the depth and the superficial extent of the wound the drain on the vitality of the tree is reduced, and at least an equal yield is secured without discounting the product of future

years. Under the old system the annual yield gradually falls off, largely in consequence of the formation of "dry-face," which is a kind of local death, affecting the exposed wood of the tree.

It is highly probable that with this diminution in the severity of the operation the ordinary term of three or four years during which a forest is now worked can be greatly increased. This means not only a larger total return, and consequently larger profits, but also that the investment period for turpentine capital is lengthened, a fact which especially appeals to the investor.

The experiments are being conducted in co-operation with the Hillman-Sutherland Land Company, which last year placed four crops of trees, of about 8,000 trees each, at the disposal of the Forest Service, and for the season of 1906 has consented to supply still more timber to further the study.

NUT GROWING AND FORESTRY

BY

LESLIE HARRISON

ONE of the main causes working against the immediate adoption of forestry is the distant future of the returns. American civilization lives too much in the present, and it is hard to persuade the average man to sacrifice himself in the interests of a posterity some generations removed.

But there are certain trees which are now and always will be valuable for their timber, and which also bear paying crops long before they are available for the sawmill. Chief among these are the chestnut, walnut, and hickory. There are a number of other valuable nut trees, but their cultivation has come into the realm of the orchardist, as it notably the case with the so-called "English Walnut" and

almond, in California and the pecan in Texas.

Little has as yet been done in the improvement and cultivation of our native nuts, especially those borne on valuable forest trees. Much attention has been given to the orchard varieties, but when our indigenous nuts have been improved it is probable that they will be even more in demand than some of the more important carefully cultivated nuts of the present day.

The chestnut has received some attention, particularly in Pennsylvania and New Jersey, and it is deserving of considerable more, for its main value lies in the fact that it can be used on rough upland country where the possibility of other crops would be at a

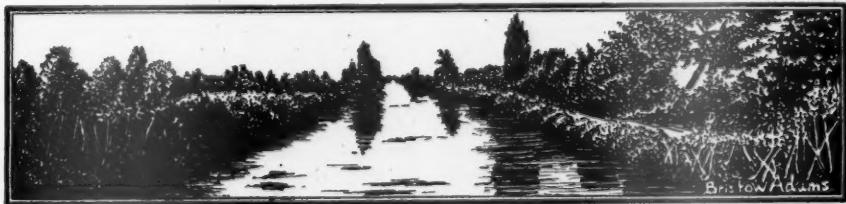
minimum. Moreover, it has been successfully demonstrated that imported and fancy varieties can be grafted onto native hardy stock, to produce fine nuts in great profusion. The different kinds of hickory and walnut need lower lands, but even these trees can be successfully grown in bottom lands whose frequent overflow renders them unfit for farming purposes. While these varieties are growing they are not only producing a valuable timber stand for the future, but in the present they incidentally furnish a valuable by-product in the nuts grown, making such plantations valuable properties long years before they mature for lumber. By this plan annual harvests will pay the expenses of forest operations, and the man who plants these hardwood trees has a reward in addition to the feeling that his children will have a valuable inheritance in the timber.

Mr. E. A. Sterling, of the U. S. Forest Service, in a report furnished to the New York Forest, Fish, and Game Commission, recommends highly the cultivation of chestnut groves, basing his recommendation on actual observations of groves in New Jersey and Pennsylvania. In these two states chestnut culture has been tried in two ways: in groves of actual forest growth under forest conditions, and in orchards under orchard conditions. The former method is a complete success, and in its utilization of waste land takes nothing from areas which otherwise might be profitably devoted to the cultivation of other crops. In the latter method the chances of failure seem to be greater, and in case of a failure there is not only the loss of

the crop itself, but the loss of the use of the ground on which the attempted crop was grown. The most successful method in use was the grafting of Japanese, European, or desirable native varieties on the coppice growth on cut-over chestnut lands, thus insuring, in the second growth a maximum annual crop value in a minimum time.

It has been found that the Paragon is the best variety for grafting, and these will be in bearing in four years, with an annual increase in the value of the harvested crop. There is no trouble in disposing of the yield, as the demand is far in excess of the supply. The best Paragon nuts sell readily at prices averaging 10 per hundred-weight, and a usual price is \$7 per bushel. While the trees do not produce phenomenal yields in their early years, especially if many of the burrs are removed in order to get improved quality and size of nuts in the remaining ones, still the yield of older trees is enormous, single trees giving \$40 worth of chestnuts.

It is probable that the success attained by the Pennsylvania groves will tempt others to make use of worthless old hillsides to produce a crop of nuts as well as timber, and under such conditions the work forms a branch of forestry rather than horticulture, since the essential elements of the forest are all there. More than that, chestnut culture should go a long way in solving the problem of reclaiming worthless burned and waste land, which at the present time is a standing menace to surrounding forests. In addition to this it provides for a more complete utilization of forest areas.



THE CALAVERAS GROVE OF BIG TREES

Reasons for Their Preservation by the Federal Government

BY

MRS. LOVELL WHITE

Chairman, Calaveras Big Tree Committee, Outdoor Art League of California.

THE Calaveras Groves of Big Trees were discovered by Gen. N. P. Chipman, of California, in 1841. The existence of the Big Trees, those giants of the forest, became known over the entire world so soon as the slow methods of transportation then in vogue in California could carry the news of their discovery abroad. When the truth concerning the story of the Big Trees was verified, distinguished scientists from the great centers of learning in Europe visited the newly revealed mammoth groves, as they were sometimes called. The north grove contains 101 big trees and the south grove, some six miles removed, claims 1,380.

About this time a man came from England in the interest of the world's fair to be held in the Crystal Palace in London. He purchased from the owner one of the largest and most beautiful trees in the north grove, called the "Mother of the Forest." He paid ten thousand dollars for the tree and killed her by literally skinning her alive. By the aid of sharp instruments he took the thick bark in sections from her body and thus left the mighty "Mother of the Forest," white and bare and an almost tragic figure, standing in the midst of the green woods. Removing the bark to London, he there erected a cylinder of the sections into the exact shape of the denuded tree. This similitude of a Calaveras big tree was viewed by hundreds of thousands of people and the fame of the California big trees became world-wide.

It is now six years since the grove passed, by purchase, from the hands of

the original owner, who kept a hotel in the north grove, into the possession of another, who evidently was inspired with more practical ideas than were entertained by the tree lover who exploited the groves as mere show places.

When the sale was reported by the newspapers, the women of the California Club, of San Francisco, at once took action toward the end of preserving to future generations a wonderful heritage worthy our name and country. The California congressional delegation was instructed to present a bill to Congress asking the government to purchase the groves.

The Big Tree bill has easily passed the Senate at each of its six years of history in Congress, but it can proceed no further and lodges ignobly in the House of Representatives, where existing difficulties seem insurmountable. Meantime the price of timber holdings has increased so rapidly on the Pacific coast that property has almost doubled in value, and the problem of acquiring the trees becomes more and more complex. The age, size, beauty, and unsurpassed grandeur of these prehistoric giants among trees lend them a worth beyond the mere commercial estimate put upon them by lumbermen. We are told that the *Sequoia Gigantia* are the oldest living things on earth today, and that they can only be found in detached groves on the western slopes of the Sierra Nevada Mountains. They are priceless, and their advent in the world's history antedates that of the patriarchs of the Bible. These matchless treasures

should belong to the nation and be vaunted as its chief pride and glory. Yet with them in peril we sit idly by awaiting the trend of events.

What is to be the fate of the Calaveras groves? What is the wish of the people concerning their destiny? There must be some way to acquire the groves for posterity.

If the one million and a half of people who signed a petition in 1904 sent by the Outdoor Art League of San Francisco to President Roosevelt urging him to request Congress to pass the Big Tree bill had accompanied their names with a dollar each the trees could easily have been purchased, and also the magnificent forest tracts immediately surrounding the groves. But this was not asked, be-

cause the league believed that Congress would pass a bill so generally demanded by the people and indorsed by President Roosevelt, who sent a special message to Congress on receipt of the huge petition, urging it to pass the bill.

In view of the monetary condition of the United States government, and the many demands to be made upon the common Treasury, but little hope can be entertained for favorable legislation for the groves at the present session of Congress. What, then, is the next step to be taken? Will you abandon the big trees to an ignoble fate, or will all patriotic Americans unite in some feasible plan to preserve to the world the greatest living marvels now extant in the universe?

RECENT PUBLICATIONS

Evergreens; How to Grow Them. By C. S. Harrison. Pp. 95, illustrated. Webb Publishing Co., St. Paul, Minn., 1906. Cloth, 50 cents net; paper, 25 cents net.

This little volume is, above all, a practical work. The text is in simple, untechnical language, combining a guide to the selection and growth of the better known conifers, with full and explicit descriptions of various species and their peculiarities. Mr. Harrison is president of the Nebraska Park and Forestry Association, and the deep interest that he feels in forestry is manifested throughout the book, notably the first chapter, where the effects of forest denudation are forcibly and succinctly brought out. Mr. Harrison has had more than thirty years' experience in nursery work and forest planting in Nebraska, and this book is the result of his experience and observations. It should prove especially valuable to the farmers and land owners of the West and Northwest.

Forestry in Massachusetts. Second Edition. Bulletin No. 1, Forest Service of Massachusetts. By Alfred Akerman, State Forester. Pp. 19. Wright and Potter Co., State Printers, Boston, 1905.

This is an interesting little pamphlet designed to create an interest in forestry in Massachusetts and to set forth the aims of the State Forest Service and its work. The Forest Service of Massachusetts was only established in 1904, but already it has accomplished considerable, and in the future, when it secures even more general support,

plans to further increase its activities. The introductory part of the bulletin is an excellent exposition of the forest situation in Massachusetts, and of the importance of conservative forest management.

The First Country Park System. A History of the Development of the Essex County Park of New Jersey. By Fred W. Kelsey. J. S. Ogilvie Publishing Co., New York. Price, \$1.25.

It is quite true, as the author states in his opening paragraph, that the interest in parks and park development is constantly growing. One, therefore, turns to this publication with the desire to know just what the community, of which the city of Newark is the center, has done. He is disappointed, however, to find that there is very little information about the parks themselves, and that he must go through over 200 pages of uninteresting matter to learn a few facts. It is apparent that Essex county has acquired a valuable park system; but the trials and tribulations through which the organizers went is of little importance to the outsider. The essential fact seems to be that for an expenditure of about \$5,000,000 Newark and the Oranges have acquired a fine park system. This outlay is apparently excessive, though no doubt the future will count the money well spent. The book cannot be recommended as valuable to anyone but those who care to know what difficulties are encountered in a work of this kind.

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DEPARTMENT OF THE INTERIOR, Washington, D. C., February 8, 1906. Sealed proposals will be received at the office of the Engineer, United States Reclamation Service, Glendive, Mon., March 12, 1906, for furnishing about 427,000 pounds of square steel bars for reinforcement of concrete. Particulars may be obtained by application to the Chief Engineer of the Reclamation Service, U. S. Geological Survey, Washington, D. C., or to the Project Engineer, Glendive, Mon. THOS. RYAN, Acting Secretary.

DEPARTMENT OF THE INTERIOR, Washington, Washington, D. C., January 17, 1906. Sealed proposals will be received at the office of the United States Reclamation Service, 1108 Union Trust Building, Los Angeles, Cal., until 2 o'clock p. m., February 28, 1906, for the construction of sluice gates and regulator gates complete with piers, bridging and operating machinery for Laguna Dam across the Colorado River at a point about 10 miles northeast of Yuma, Arizona. The work involves the building of about 1700 cubic yards of concrete piers and abutments and the furnishing and erecting of about 300,000 pounds of cast iron, 320,000 pounds of steel structures, and 40,000 pounds of machinery. Specifications, forms of proposal, and particulars may be obtained by application to the Chief Engineer, U. S. Reclamation Service, Washington, D. C.; to J. B. Lippincott, supervising engineer, 1108 Union Trust Building, Los Angeles, Cal.; or to Homer Hamlin, project engineer, Yuma, Arizona, at whose offices the plans may be inspected. E. A. HITCHCOCK, Secretary.

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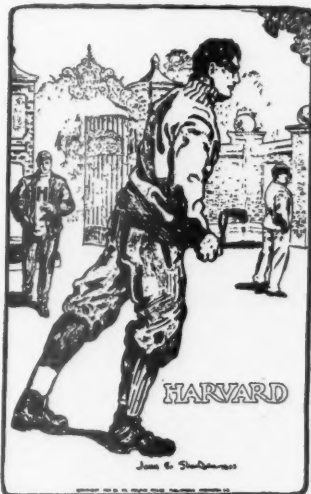
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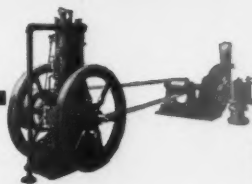
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